THE BRITISH JOURNAL OF OPHTHALMOLOGY,

INCORPORATING

THE ROYAL LONDON OPHTHALMIC HOSPITAL REPORTS,

THE OPHTHALMIC REVIEW,

AND

THE OPHTHALMOSCOPE.

Editor:

SYDNEY STEPHENSON.

Sub-Editor:

E. ERSKINE HENDERSON.

Editorial Committee:

ENGLAND. *London:* SIR JOHN HERBERT PARSONS, C.B.E., F.R.S. (*Chairman*), E. W. BAINBRIDGE-BELL, A. F. CARGILL, E. TREACHER COLLINS, J. B. LAWFORD, SIR WILLIAM LISTER, K.C.M.G., A. S. MAYOU, LESLIE PATON, *Bath:* W. M. BEAUMONT. *Birmingham:* T. HARRISON BUTLER, PRIESTLEY SMITH. *Bristol:* CYRIL WALKER. *Burnley:* T. SNOWBALL. *Cambridge:* G. WHERRY. *Hull:* W. C. BOCKLIFFE. *Liverpool:* T. H. BICKERTON, E. STEVENSON. *Manchester:* J. GRAY CLEGG. *Newcastle:* A. S. PERCIVAL. *Nottingham:* W. G. LANE. *Oxford:* P. E. H. ADAMS. *Plymouth:* J. R. BOLSTON. *Sheffield:* G. H. POOLEY. *Wolverhampton:* BERNARD CRIBBLAND. SCOTLAND. *Edinburgh:* G. MACLEAN, P. G. SYM. *Aberdeen:* C. H. USHER. *Glasgow:* A. J. BALLANTYNE. *Stirling:* ERNEST THOMSON. IRELAND. *Dublin:* EUPHAN MAXWELL, LOUIS WERNER. *Belfast:* JAMES CRAIG. *Cork:* A. W. SANDFORD. WALES. *Cardiff:* F. P. S. CRESWELL. *Swansea:* F. G. THOMAS. INDIA. *Bombay:* S. MCPHERSON. *Calcutta:* W. V. COPPINGER. *Lahore:* LIEUT.-COL. H. AINSWORTH. *Lucknow:* A. E. J. LISTER. *Madras:* MAJOR R. E. WRIGHT. AFRICA. *Cape Town:* D. J. WOOD. *Johannesburg:* A. G. BRINTON. *Grahamstown:* J. A. LEA. *Egypt:* A. F. MACCALLAN, C.B.E. AUSTRALASIA. *Sydney:* F. A. POCKLEY. *Melbourne:* SIR J. W. BARRETT, K.B.E. *Brisbane:* J. LOCKHART GIBSON. *New Zealand:* H. LIDDO FERGUSON, C.M.G. CANADA. *Montreal:* J. W. STIRLING. *Toronto:* JAMES MACCALLUM. CHINA. *Hong Kong:* G. M. HARRISON.

LONDON:

PRINTED AND PUBLISHED FOR THE BRITISH JOURNAL OF OPHTHALMOLOGY, LTD.,

BY GEO. PULMAN & SONS, LTD., AT 29, THAYER STREET, MANCHESTER SQUARE, W. 1.

Issued Monthly: Single Copy 5 shillings net.

Annual Subscription: Two Guineas, post free.

ADVERTISEMENT

Telephone: MAYFAIR 2881.
Telegraphic Address: "LITHOTRITE, WESDO, LONDON."

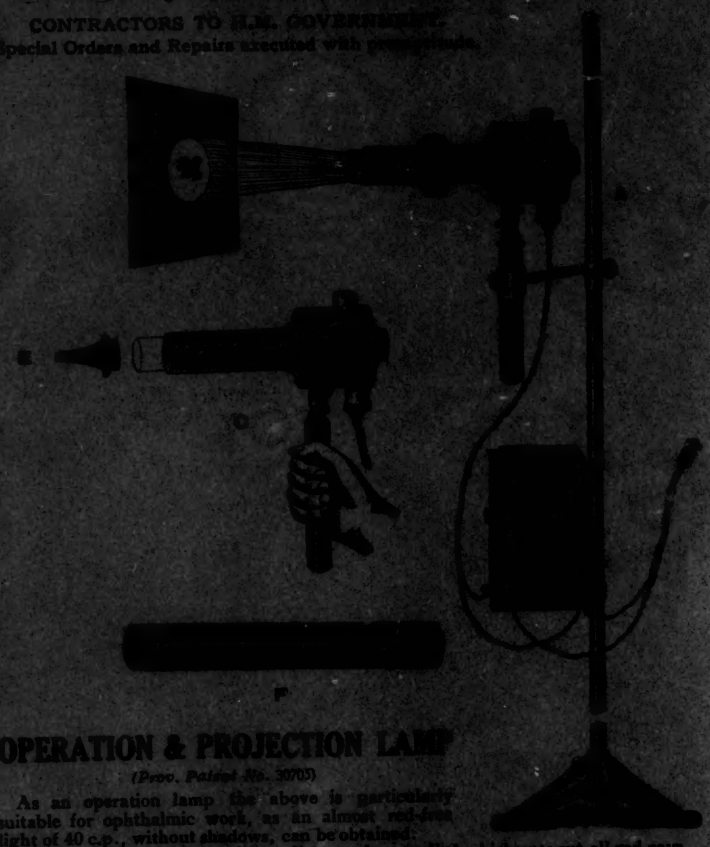
JOHN WEISS & SON, LTD.

287, Oxford Street, London, W.1.

Instrument Makers to the Royal London Ophthalmic Hospital (Moorfields) and to the principal British and Colonial Hospitals.

CONTRACTORS TO H.M. GOVERNMENT.

Special Orders and Repairs executed with promptitude.



OPERATION & PROJECTION LAMP

(Prov. Patent No. 30705)

As an operation lamp the above is particularly suitable for ophthalmic work, as an almost red-free light of 40 c.p., without shadows, can be obtained.

For examination of the fundus a filter can be supplied which cuts out all red rays.

The tube is provided with a slotted opening to carry 1" microscopic slides for projection on to a screen. If wider (2") slides are to be used, a special chamber with a spring gate is supplied in which the slide can be held as desired. This, with a slightly different optical system and an iris diaphragm (which serves for operations), gives a magnification of 50 diameters at 10 feet.

A transilluminating cone and slides for testing for colour-blindness can also be supplied.

Prices from £7 10 0. Full particulars on application.

THE BRITISH JOURNAL

OF

OPHTHALMOLOGY

DECEMBER, 1923

COMMUNICATIONS

NOTES AND SPECIMENS OF A CASE OF INTRA-ORBITAL NEOPLASM*

BY

N. C. RIDLEY

LEICESTER

I HAVE brought this case before the Congress as it presents several features which are somewhat out of the common.

Mrs. C., aged 61 years, the mother of a surgical friend, first came to see me on July 14, 1922, complaining that the right eye felt swollen in the morning. The pupils were equal and active. The irides were bright and the tension was normal. There was some redness and oedema of the conjunctiva down and out. The right lens showed a few striae, otherwise there was nothing wrong to be seen in the fundus or media of either eye.

The R.V. with correction=6/6, the L.V.=6/5 and with +3 D.Sph. added, J.1 at 11 in.

On September 11 there was still a good deal of conjunctival oedema and slight proptosis of the right eye was noted.

No mass could be felt in the orbit, there was no diplopia, no pain and no rise of temperature. No thrill nor bruit. An X-ray photograph and examination of the nasal sinuses and antrum by a rhinologist gave negative results. The Wassermann reaction was negative. R.V. still 6/6.

* Read at the Oxford Ophthalmological Congress, 1923.

I sent her to my friend, Mr. Brewerton, for his opinion, who, after a most thorough examination, was not able to give any additional information, but advised large doses of potassium iodide.

On September 21 appearances were the same, but the right vision was not quite 6/6. Both discs had a fluffy outline, but in neither retina were the veins congested. There was no left hyperphoria on looking up.

On October 5 a measurement with the exophthalmometer gave 4.5 mm. of proptosis of the right eye.

On October 26 the proptosis measured was 5 mm., was directly forward and there was limitation of upward and downward movement of 2.5 m.a.

November 1. Rather more limitation of upward movement of right. Proptosis 5 mm.

The iodide was discontinued and extract of thyroid gr. 2.5 given three times a day.

Examination about every fortnight showed very little change. Nothing was to be felt in the orbit at any time. In December the proptosis was 7 mm., and it remained the same till January 28, 1923, when the R.V. had come down to 6/9, but no change could be seen in the right disc.

On January 29, 1923. Under chloroform an incision was made into the orbit after division of the external canthus. The orbit was then explored with the little finger, but nothing could be made out except that the optic nerve seemed greatly enlarged and felt like a strap of uniform thickness all the way. The wound was sutured and nothing more done at the time. In a week or two all was healed and the appearances were much as before, the proptosis as measured was 5 mm., but the vision was reduced to 6/12.

Early in March I sent her again to Mr. Brewerton, who considered that even were it a tumour of the optic nerve it would be much wiser to enucleate the eye and the sooner the better.

As I wished to avoid the possibility of another operation later on I decided to extirpate the orbital contents and on March 20 this was done, when a pinkish grey mass was found on the inner side of the globe and optic nerve, pear-shaped and enclosed in a shining capsule. It was divided as far back as possible, but appeared to extend backwards into the sphenoidal fissure. Roughly, its measurements were: from front to back 1½ in.; diameter in its widest part 7/8 in. × 5/8 in., tapering to ¼ in. at the apex of the orbit, where it was divided and where it appeared nearly to surround the optic nerve.

All went well, but on April 10 a small mass seemed to be

sprouting at the extreme apex of the orbit, so under novocain and adrenalin a radium point was thrust into this and left for eight hours.

On April 26, a button-shaped prominence could be seen below the sphenoidal fissure.

Six weeks after the first application another radium point was packed on the surface of the elevation for another eight hours.

When seen last the socket was found to be lined with skin except at the apex, and no swelling nor prominence could be detected.

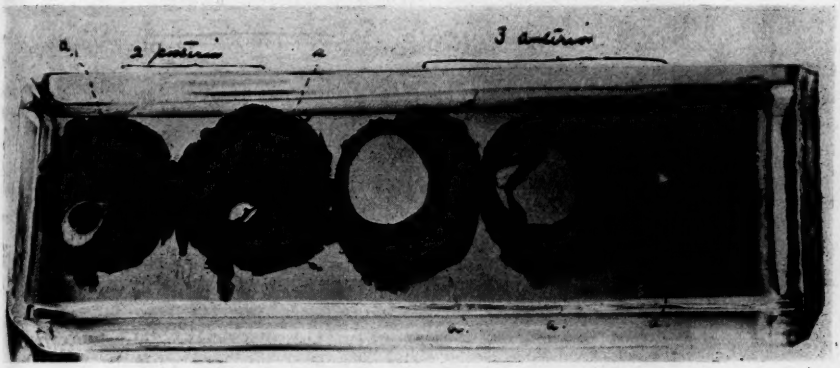


FIG. 1.

Macroscopic appearance. *a*. The growth.

The two posterior sections seen from in front, the three anterior from behind.

There was never at any time any enlargement or tenderness of lymphatic glands or sign of trouble in any other part of the body.

I hope that the growth has now been entirely eliminated and that all will go well. It was strange that although the growth was to the inner side, the proptosis was directly forwards, and that in spite of its large size nothing could be felt externally, and that in spite of the great change in the internal rectus, referred to below, the inward movements of the globe were perfect. Its position was just where it would be least liable to discovery by an exploratory operation of the kind made. I do not think anything more would have been made out had Krönlein's operation been performed.

P.S.—Two days ago the condition of the orbit was the same. Another radium point was applied as before.

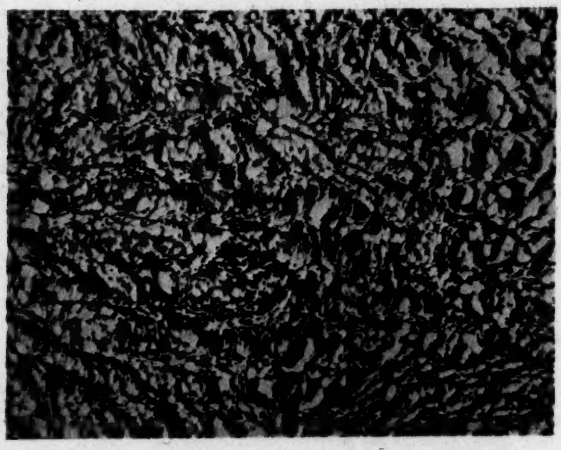


FIG. 2.

Low power. Microscopic appearance. The growth can be seen splitting up and absorbing the muscle fibres.

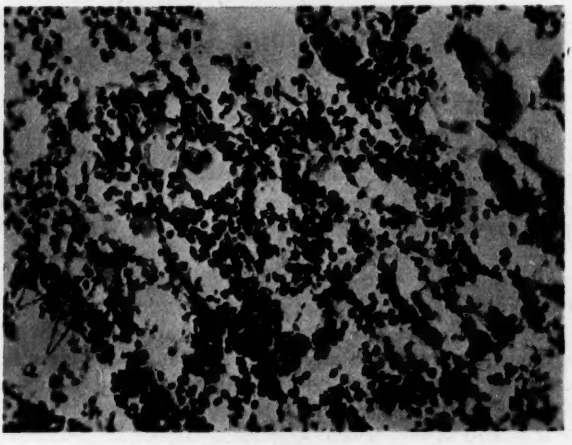


FIG. 3.

High power. Microscopic appearance
a. Muscle fibres.

Report by Dr. W. W. Mackarell, *Pathologist to the Leicester* Royal Infirmary.

Specimen of orbital contents received from Mr. Ridley, March 20, 1923

The tumour was on the inner side of the orbit occupying the position of the internal rectus muscle and macroscopically confined to the muscle. The muscle appeared much larger than normal.

The whole contents were put into 10 per cent. formalin in normal saline as received, and after twenty-four hours they were frozen and gross serial sections were cut (some of these were shown mounted).

The most posterior section was embedded in paraffin wax, and serial sections were prepared. By this means it was shown that the growth had been cut across at operation, and a portion probably left behind, the first section in the series containing a very small piece of the tumour.

The growth microscopically is a typical small round cell sarcoma. It is seen in the section to be destroying the muscle cells, and later sections show that it is not confined to the muscle, as had at first appeared to be the case, but is surrounding the optic nerve.

The cells of the growth are invading the fibrous sheath of the nerve.

Sections are shown stained by logwood and eosin, and also by van Gieson's stain.

A CASE OF ENDOTHELIOMA OF THE CILIARY BODY

BY

T. HARRISON BUTLER AND ERIC W. ASSINDER

BIRMINGHAM BIRMINGHAM

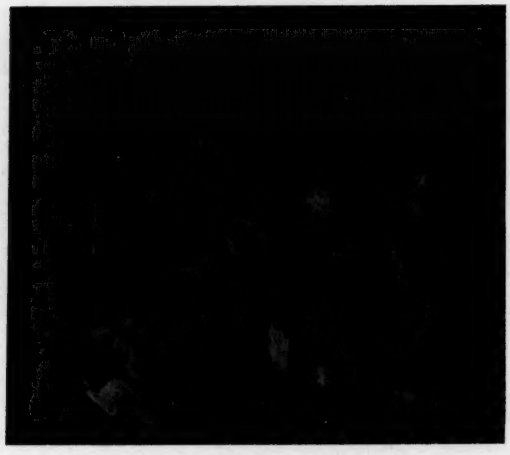
Mr. T. H., aged 56 years, came to the Coventry Hospital on June 13, 1921. He complained that the sight of his right eye had been failing for five years. R.V. 2/60; L.V. 6/9 with plus 0.5 6/6. The left eye was normal.

The right showed evidence of past iritis, there were posterior synechiae and the pupil dilated only partially with homatropin. The lens was opaque, and no view could be obtained of the interior. The patient had had gonorrhoea when a young man, but not syphilis. The tension of each eye was normal.

He appeared again on May 29, 1922. The right cataract was now mature, projection of light good, tension in each eye 20 Schiötz units. Arising from the north-west aspect of the

anterior chamber there is a solid-looking, tongue-shaped mass. Apparently attached peripherally to the iris it stretched downwards over the iris nearly to the pupil margin. Its base occupied

ENDOTHELIOMA—LOW MAGNIFICATION.



ENDOTHELIOMA—HIGH MAGNIFICATION.

about one-eighth of the corneal margin. The tip of the tumour lay freely upon the surface of the iris. The mass viewed through a lens was seen to be yellowish white in colour streaked with brown pigment which caused it to appear brown to the unaided eye.

Its base was injected. A large artery coursed over the sclera to break up into capillaries upon the base of the tumour. There was little doubt from the appearance of the tumour that it was malignant. Transillumination gave a dark shadow in the region behind the visible growth. A diagnosis of sarcoma of the ciliary body was made and the eye was enucleated.

The eye was examined by Mr. Assinder, pathologist to the Birmingham Eye Hospital, who reported as follows:—

Endothelioma in the region of the ciliary body is of very rare occurrence. Tumours difficult of classification have often been wrongly called endotheliomata, and it is surprising how often, in some laboratories, such a diagnosis is made. I am not prepared to state definitely the exact position at which this growth originated, but it probably arose in the lymphatics in the region of the ciliary body, near the angle, and invaded the iris.

The growth itself is a non-pigmented one, although pigment from the posterior surface of the iris has been incorporated in part of the tumour.

It is composed of large flattened cells, with generally an ill-defined outline, showing numerous vacuoles and comparatively large well-stained nuclei. The newly-formed vascular spaces are everywhere apparent.

According to Kettle and Ross (*Lancet*, May 19, 1921), one of the characteristic features, constantly seen, is the development of the intra-cellular vacuoles, and it is from these vacuoles, increasing in size and running together, that the irregular vascular spaces are formed.

It is probable that the tumour had been growing for some years. The patient had noted the loss of sight for five years. The slight iritis and the cataract were obviously due to the growth, for the left eye showed no trace of iritis or of cataract.

No pain was noted and the tension was never raised above the normal.

PROFESSOR VOGT'S COURSE ON SLIT-LAMP MICROSCOPY

BY

T. HARRISON BUTLER

BIRMINGHAM

ON September 3, 1923, Professor Vogt began his second course on Slit-Lamp Microscopy at the University Eye Clinic at Zürich. The first was held at Basle in September, 1922.

The course extended over a whole week, and was divided into two sections. Every day a lecture was given in the well-appointed

lecture theatre from 10 to 12, and this was followed up by practical work upon the subject of the lecture from 3 to 6 in the large dark room. This room was capacious enough to accommodate fourteen slit-lamps and forty-seven students without undue overcrowding. There were fourteen instructors: the professor himself; his four assistants; and his former assistants at Basle gathered from the various clinics of Switzerland. Dr. W. G. M. Byers, of McGill University, who had been working in the clinic, acted as one of the instructors and translated parts of the lectures into English. 450 patients had been written for.

Monday's lecture dealt with the principles of the Gullstrand slit-lamp, with its adjustments, and with the importance of being able to vary the width of the pencil of light. This pencil, in German *Büschel*, is really a ribbon of light, and will in future be called the "ribbon." Finally, the lecturer described the prismatic form of the illuminated area in the cornea, and impressed upon his class the vital necessity of learning to focus it sharply with one hand on the focussing screw of the illuminating lens of the slit-lamp, the other on the focussing screw of the microscope. Upon the clear view of the prism and the recognition of its chief sides and angles depend the power of localizing the exact position of abnormalities in the cornea, and variations in its thickness. Professor Vogt's chief assistant told us that if we had not learned to localize we had missed the whole point of the course.

Monday afternoon was devoted to the adjustment of the slit-lamp, and to learning to focus the ribbon of light and the microscope at the same time. Pigs' eyes were used for this practice. Attention was directed to localizing in the cornea with the ordinary ribbon.

Most of the students went home feeling that they were faced with an instrument as difficult as if not more difficult than the ophthalmoscope and the retinoscope, and the writer decided that if he had not attended the course his slit-lamp would have been of little use to him. He had thought, and doubtless many others think, that the slit-lamp is simply a very superior instrument for focal illumination; it is this, but also very much more. Czapski's microscope used in combination with Gullstrand's slit-lamp opens an entirely new chapter in ophthalmology, an interesting but very difficult chapter.

The lecture on Tuesday was devoted to the four methods of illumination: observation in focal light; by transmitted light; by indirect lateral illumination; and in the mirror region. In the first case the object is seen in light directly thrown upon it, by light reflected from itself. In this wise we see the front of the cornea and the substance of the cornea, the iris, and the pupil margin; the capsules and the whole thickness of the lens.

Transmitted light is light reflected from the iris and lens. Iris light enables us to see the cornea lighted up from behind, and lens light is useful to examine the pupillary margin of the iris. The direct light is so strongly reflected from the surface of the iris that the finer points may be lost in the dazzle, but are well seen by the softer reflected light. (The mirror light is obtained by closely approximating the slit-lamp to the microscope so as to make the angle between them as acute as possible.) The patient is made to fix an object between the two so that the direction of his gaze bisects this angle. The observer now sees the image of the light and on the edge of the mirror so formed it is possible to observe the corneal endothelium as a delicate mosaic of cells, and the lens shagreen.

The practical work in the afternoon was devoted to mastering these methods of illumination and to practising deep localization with a narrow ribbon in the cornea, anterior chamber, lens and vitreous. When the students entered the dark room they found the slit-lamps dismantled and every adjustment thrown out. The first exercise was to reassemble the lamp and adjust it. Pigs' eyes were still used, first unaltered and then with the cornea removed for the examination of the lens. Artificial eyes were also employed to practise focussing the instruments and to obtain the mirror light.

We finished the second day still more impressed with the difficulty of the work.

Wednesday's lecture was devoted to the cornea. The normal thickness, pathological thickening and thinning of the cornea were dealt with in turn. The professor spoke at some length upon his discovery that the corneal endothelium could be seen in the mirror area. The light is reflected from the inner aspect of the cells and these show up as yellowish hexagonal cells. The corneal nerves are easily detected as white branching lines in the illuminated prism of light formed by the slit-lamp. Folds in Descemet's membrane show up as lines which are white or dark according to how the light falls upon them.

In the afternoon the class began work upon patients who were chosen to demonstrate normal and pathological conditions in the cornea.

The lecture on Thursday began with the subject of the anterior chamber. Professor Vogt pointed out that with the slit-lamp it was almost always possible to demonstrate the existence of some sort of chamber in subjects, which, examined by the ordinary methods, appeared to have none. The existence of an "eddy" current in the anterior chamber caused by the difference in warmth between the cornea and the iris was mentioned. This can be seen with the slit-lamp only when the aqueous contains discrete particles

such as cells. The detection of cells in the aqueous has a valuable clinical significance. They appear in sympathetic ophthalmia before any other sign, and if detected may indicate the removal of the exciting eye, and enable active treatment to be initiated several days earlier than would be the case were we depending upon orthodox methods of examination.

The most interesting and important part of this lecture dealt with the lens. Vogt was the first to point out that the slit-lamp showed layers of discontinuity in the lens, which, even in the youngest children, could always be demonstrated. He divided the lens into: capsule, a subcapsular dark area, then the cortex, the senile nucleus, and, finally, the embryonic nucleus. The anterior capsule seen in mirror light showed a shagreen, even in young children. This light also brought out the shagreen of the posterior capsule. The anterior capsule accurately focussed with the narrow ribbon appears as a fine bright line. Under it is a narrow dark line, and then we see the cortex as a cloudy band. Suitable adjustment of light brings out the anterior and posterior lens figures. Just behind the posterior capsule on the nasal side the remains of the hyaloid artery can be seen in the large majority of individuals.

In the afternoon patients were examined illustrating the subjects of the lecture.

Friday was reserved for a lecture upon the iris.

The slit-lamp makes it easy to see that the stroma of the iris consists of two layers, the anterior and posterior mesodermic plates.

The anterior layer stops short at the "frill" (*krause* in German). Suitable lateral illumination will often demonstrate a definite cavity at the frill between the two layers, Fuchs' cleft. Changes in the iris due to senile alteration and to disease were considered in turn. The abnormalities of the pupil margin were mentioned and shown in the afternoon.

The lecture on Saturday was upon the vitreous. The normal structure of the vitreous and its changes in disease, such as detachment of the retina, myopia, and haemorrhage, were treated in turn. The slit-lamp shows that prolapse of the vitreous is far more common after such an operation as discission than we suppose. The micro-arc lamp is necessary for a complete examination of the vitreous. This apparatus, invented by Vogt, was demonstrated in the dark room in the afternoon.

There was a special lecture upon the sources of error in slit-lamp work which was given in the afternoon.

In addition to the main course there were several interesting and valuable "side shows."

On Thursday and Friday afternoons patients were provided for examination with red-free light. The apparatus consists of a micro-arc light housed in a suitable chamber. The carbons are fed by clockwork. The light is passed through a filter and emerges as a beam of green light. This is allowed to fall upon the temple of the patient and the fundus is observed with an ordinary reflecting ophthalmoscope with the mirror tilted at 45 degrees. The examination must be short for the light is very intense, and is harmful to the eye. For this reason it is not necessary to have an arc light with clockwork feed. The apparatus in use is made by Zeiss and costs about twenty-five pounds. A simpler lantern was made by Leitz, but appears to be no longer obtainable. The writer made inquiries and finds that Messrs. Koch, of Bahnhoff Strasse, Zürich, can supply the cheaper lantern for about seven pounds. With import duty it should be under ten pounds. Messrs. Zeiss also propose to bring out a simpler lantern at about fifteen pounds.

Red-free ophthalmoscopy is valuable in that small haemorrhages, invisible in white light, come out black and are easily detected. The yellow colouration of the macula is plainly seen, and the nerve fibres in the retina are visible. It is claimed that examination of the fundus with red-free light allows a diagnosis of tobacco amblyopia to be made forthwith from the characteristic changes seen at the macula.

Professor Vogt devoted part of his lecture on Saturday afternoon to this subject, which he illustrated by many beautiful drawings projected upon the screen with the epidiascope.

The professor gave a demonstration of a family of buphthalmic rabbits. Some time back at Basle he obtained a litter of three rabbits, one male and two females, all with buphthalmos. From these he has been able to breed as many as he wishes, all with buphthalmos. The question was considered in the light of Mendel's Law.

A demonstration was given in the basement of the hospital upon the professor's experiments in the production of cataract by infra-red rays of low refrangibility.

The light from an arc-lamp is first cooled by passage through a glass cell through which a current of water passes. It then traverses a trough filled with a solution of iodine in potassium iodide. The resulting red rays are concentrated upon a rabbit's eye by a double convex lens of rock-salt. The rabbit has been put to sleep by an injection of "Somnifen." In from one quarter to half an hour the lens becomes completely opaque. We were told that Messrs. Zeiss will attempt to produce a glass that will filter these red rays and prevent the formation of cataract, and it is hoped that spectacles will be made that will enable glass

blowers to carry on their trade without the danger of cataract. It should be stated that some fifteen years ago a Committee of the Royal Society (the Glassworkers' Cataract Committee) took this research in hand. It was for this Committee that Sir William Crookes prepared synthetic glasses, possessing powers of selective absorption.

One of the most valuable demonstrations that was given by the professor referred to his method of taking bone-free X ray photographs of the eye. A small plate (use an oval dental plate) is pressed into the orbit on the inner aspect, and the tube is located at the side so that the rays fall upon the eye at an oblique angle. The exposure should be three seconds with a soft tube.

The resulting photograph shows the upper and lower lids, the cornea, and takes in about half the circumference of the eye. Inasmuch as the eye is photographed without the intervention of bone, almost any foreign body will show up. Lead-free glass, spicules of bone, or stone are plainly seen. A second exposure should be made with the plate pushed in above the eye. If a small pin be hooked into the conjunctiva, a fairly accurate localization is possible. We have now made this method a routine in our own practice, and have found it very useful. It is possible to get a photograph in fifteen minutes at a cost of sixpence. Small metallic fragments which are too small to show up in an ordinary exposure through bone are quite plain in a bone-free picture, and it is these small fragments, which have not sufficient kinetic energy to pass deeply into the eye, that can be demonstrated in the anterior segment. In two of our cases the fragment lay in the vitreous just behind the ciliary body.

Professor Henker demonstrated his apparatus for estimating the refraction of an eye by direct inspection with the small Gullstrand ophthalmoscope. Several members of the class were interested and some had thoughts of buying the apparatus. We asked Professor Henker to work out the refraction of some of the members. Unfortunately, the errors were so great, and the blinding effect of the investigation so great, that we decided that the apparatus was a "wash-out."

Professor Hess gave a most lucid and interesting lecture demonstrating his apparatus for mapping out the loss of function in paresis of ocular muscles. This is so very practical that no ophthalmic hospital should be without it.

Professor Hess, formerly an ophthalmic surgeon, is now Professor of Physiology in the University of Zürich.

A black sheet of cloth, about two feet by one and a half, hangs upon a frame. On it are nine red dots equally spaced in two rows at each side and one down the middle. The patient holds a stick at the end of which is a green arrow. He has a green glass before

one eye, and a red before the other. Thus he sees the red spots with one eye, and the green arrow with the other. He is asked to place the arrow upon the dots in turn. On his non-paralysed side he succeeds. He falls short of the dots in the middle line, and far short of the lateral dots. The figure formed by joining up the various positions is now measured up and transferred to a chart. The nature and position of the figure enables the muscle involved to be read off at a glance. The spectacles are now reversed and the patient fixes with the paralysed eye. The resulting chart in addition to giving the secondary deviation gives the amount of permanent contracture. A study of these two charts and especially of the contracture is of great value if an operation is proposed. The apparatus can be obtained from the Physiological Institute, Zürich.

We took the opportunity to accompany Professor Vogt round his wards. He starts at 7.45 and sees every patient daily. We thought that many of the patients would have been treated with us as out-patients, but the provision of ample beds enables such to have the advantage of in-patient treatment. Ophthalmia neonatorum is treated by injections of milk. The milk is boiled for a minute, and a second injection is made before the reaction of the first has passed off. Professor Vogt says that this method shortens the period of treatment very considerably. Serpent ulcer is treated by removal of diseased sac, by evacuation of the hypopyon by a peripheral corneal incision, and, finally, by the use of a "Priessnitz," which is really a fomentation of zinc sulphate in half per cent. solution. The professor stated that this treatment was most satisfactory. Blepharitis is handled with a powder containing zinc oxide and naftalan.* Buphthalmos is never left to nature. Either an iridencleisis is performed or repeated sclerotomies are done.

In the out-patient department refraction is carried out chiefly by estimation with the refracting ophthalmoscope, and with the ophthalmometer; retinoscopy is not often employed.

The notes, both in- and out-patient, are kept in books, each of which has a separate index; there is no card index. We gathered that on an average twenty-five new patients attended daily, and the staff consists of the professor, four resident assistants, and occasional help from doctors working in the clinic. This allows five new patients a day to each, so perhaps the book system can be managed! The large amount of help and the comparatively small number of patients explains why it is possible to carry out the minute examination and the researches that we associate with continental work.

*Naftalan, 5·0 grammes; zinc oxide, 2·5 grammes: wheat starch, 2·5 grammes Especially recommended for blepharo-conjunctivitis with much secretion.

The professor sees his private patients at the clinic from 2 to 3 p.m.

The whole course was most inspiring from every point of view. The lectures were copiously illustrated, chiefly from Vogt's Atlas of slit-lamp microscopy, and the instructors were untiring in their efforts to teach the difficult technique of the slit-lamp. We feel certain that no one is at all likely to get much value out of his slit-lamp unless he has attended a course of this nature. When one has mastered the technique, and what is more important has been shown what one ought to see, then practice alone is necessary to attain efficiency.

The course ended with a dinner on Saturday evening attended by the Rector of the University, Professor Vogt, Professor Hess, the Instructors, the Members of the Class, and others.

On our journey home we stopped at Basle and visited the eye clinic there. We had an opportunity to examine Nagel's Anomaloscope, an apparatus for testing colour perception by the Rayleigh Equation. The field of a telescope is divided by a horizontal line. The lower half is illuminated by sodium light. The upper half can be illuminated by red or green lights by turning a screw. The two lights are mixed till the upper and lower fields match. The proportion of red and green employed is read off on a scale, and from this the colour error can be deduced.

We were indebted to the first assistant, Dr. Koby, for showing us over the clinic. Professor Hallauer had not taken over his duties.

A large number of the beds in the clinic are allotted to private patients, who are divided into three classes. The fees for the first class amounted to five or six pounds a week, and about fifty guineas would be paid for an extraction. The second and third class pay less. The cost of the free patients is to a large extent defrayed by the various sick clubs and insurance schemes (*Kranken Kassen*).

Here again we were surpised to find that all the notes were taken in books, and we noted that both here and at Zürich the waiting room would accommodate only about forty patients, and in neither case did we ever see a patient waiting.

THE MODERN ELECTRIC OPHTHALMOSCOPE, ITS DISADVANTAGES AND ADVANTAGES

BY

MAJOR R. E. WRIGHT, I.M.S.,

ACTING SUPERINTENDENT, GOVERNMENT OPHTHALMIC HOSPITAL, MADRAS

EVER since the electric ophthalmoscope appeared on the market it has been in constant use in this hospital, and the staff of the institution has seen numerous models spring up and fade away. This process has been too rapid for comfortable smooth working, and the dislocation of routine work and teaching caused by the stocking of a large variety of instruments for which spares are difficult to obtain, is disconcerting. This fact has so impressed itself on me that I feel compelled to draw the attention of those members of the profession who use the electrical ophthalmoscope to the poor work, lack of enterprize, conservative attitude, and high charges of the firms which turn out these instruments, and perpetuate their disadvantages often in spite of hints and suggestions from those who use them. At the present time we have in use in this hospital five models of electric ophthalmoscopes constructed by five different makers. The Morton-Marple model has always appeared most satisfactory, and I may say at once that without very strong reasons we would not consider other models in ordering new stock. Of the Morton-Marple instruments in stock we have specimens representing five well-known makers. Unfortunately, these makers have introduced modifications from time to time without informing purchasers as to the change. They frequently cease to supply spares which will fit all the models, and thus place clients at a disadvantage, whilst retailing at a price which should ensure the instrument lasting a life time. Durability will hardly be found to characterize any of the instruments at present procurable, and when such are subject to wear and tear and hardships of a busy dark room they very quickly show up their weak points. It would be much more satisfactory for the purchaser, if makers of these instruments would issue detailed specifications of their models and be responsible for the supply of spare parts for those models up to the average duration of life of the instrument. In considering some of the weak points of the electric opthalmoscope I will confine myself to the Morton-Marple type. The chief replacements required for the instruments which we use are, mirrors, lamps, terminals for the flexible cable, and lenses. I presume there is no reason why the electric ophthalmoscope should not be fitted with as good and well-finished a series of lenses mounted in a satisfactory endless groove mechanism

as was to be obtained in the high-grade reflecting ophthalmoscopes of the Morton type, still, it is rarely that one finds a lens series in an electric ophthalmoscope as well constructed as in some of the older reflecting instruments, particularly those of the Curry and Paxton make.

With reference to the mirrors, it is very seldom that an instrument maker persists for any appreciable time in manufacturing the same size and shape of mirror or mounting it in a constant manner. The result of this is that instruments have frequently to be sent away for mirror replacement. This ought to be quite unnecessary. The owner of an instrument ought to be able to replace his own mirror, and the firm that supplies such instruments ought to see to it that they retain a stock of the particular type of mirror originally supplied with a particular model of machine.

The metal mount on which the mirror is set frequently gives trouble. Some of our most recent instruments obtained from well-known London houses have their mirrors fitted in metal, the chemical decomposition of which produces a green deposit on the mount, this tarnishes the mirror in a very short time and extends down to the small lens between the mirror and the lamp. This is obviously very undesirable, it represents cheap and careless work, and is not to be found in old instruments in which the metal work is good and better finished. The recent models by a well-known American firm have a movable clip, which enables one to replace the mirror with great ease. It appears good, and provided the metal is suitable and the hinge on which it works of really good construction it ought to give satisfaction. The terminal by means of which the instrument is coupled to the flexible cable is very frequently a source of trouble. One has but to handle a modern ophthalmoscope to appreciate this. The most recent model from America which we have in stock, when taken in the hand with the sliding device which regulates the position of the light between the finger and the thumb (and it will not move without finger and thumb control), will be found to have the terminal gripped by third and fourth fingers, and the flex leading to the terminal bent at an acute angle by the heel of the hand On trying now to push up the sleeve which controls the light, instead of the light moving up it goes out altogether as the terminal becomes detached in the grip of the third and fourth fingers. It is quite obvious that the handle is too short, and that a plug-in terminal should not be detached with greater ease than the sliding device moves up and down. The great error in construction is, that the handle is far too short. Instrument makers who turn out these expensive machines would do well to examine and handle a von Fragstein and Kempner's pupil reaction tester, not as sometimes figured without a terminal, but the pattern with

a 2½-inch bayonet clutch, metal and vulcanite terminal. This gives a good example of what a comfortable practical handle should be like both in length, thickness, design, and workmanship. In this instrument the terminal is carried well beyond the heel of the hand, and ends in a knob. The bayonet by which the terminal is fixed to the handle is efficient, and the method of attaching the end of the flex to the terminal is exceedingly simple, so that an operator, although not an electrician, can easily mend it should the flex pull out. The sliding device which actuates the tube carrying the lamp should be of such a nature that it can be moved with great ease and delicacy, for when using the electric ophthalmoscope, the thumb and the first finger of the right hand are occupied in rotating the lenses. It would, therefore, be more appropriate if the sliding device could be moved with the second and third fingers. The flex which is supplied with these instruments is often of poorest possible quality. It ought to be of the highest grade obtainable, and each wire should be thoroughly insulated and then encased with its fellow, without twisting, in a common cover. I have mentioned above the undesirability of the ulnar border of the hand kinking the flex at its entry to the terminal at the bottom of the handle. At this point interruption of the circuit most frequently takes place, but short circuiting is quite common elsewhere owing to the poor insulation. A very simple improvement which might be made in most of the instruments is the insertion of a spring contact in the tube into which the lamp is screwed, so that the variation in length of the thread of different lamps may be compensated for. One frequently gets a new stock of lamps and finds that they cannot be screwed home so as to make contact with the conductor which runs up the tube centre. Standardization of the lamp screw threads would save much trouble, and a good pattern filament is badly needed. A filament describing a small circle at right angles to the long axis of the lamp is perhaps best. The range of movement of the lamp too is frequently faulty. It should be capable of being moved to a reasonable extent from a point immediately behind the lens which separates it from the mirror. I will not now elaborate the various points in favour of the electric ophthalmoscope. When the instrument is working, it is so far superior to the reflecting ophthalmoscope as to be almost fool proof. The average individual at the first attempt can see full details of the fundus of the eye when the pupil has been dilated. This cannot be said of its predecessor the reflecting ophthalmoscope. It is much more restful to the eyes of the operator and far cooler than the reflecting instrument. Perhaps, however, the point most in its favour is the ease with which minute opacities in the media may be picked up and observed.

SMALL ELECTRIC OPHTHALMOSCOPES*

BY

BASIL GRAVES

LONDON

DR. HARDCASTLE'S reference in the June issue to the electric ophthalmoscope prompts me to offer some general comments on this instrument; it has such obvious advantages in being easier and more rapid to use than the ordinary direct ophthalmoscope if only because the observer is rendered less dependent on a fixed attitude of the patient's head. The observer can sit in front of the patient and examine either eye as the patient leans forward without the necessity to move his seating to the side of the patient; or if sitting on one side of the patient it is not necessary to move to the other side in order to examine the opposite eye, it being sufficient that the patient turns his head sideways. Observation by the direct method of the influence on the venous pulsation at the disc when the patient turns his eye to the extreme outward direction is only practically possible by means of a self-luminous ophthalmoscope.

Apart from obvious advantages due to non-dependence on an accessory light-source, there are certain other advantages peculiar to the electric ophthalmoscope which I feel are worth emphasis because the majority of the instruments I have seen are constructed without regard to simple principles of illumination on which some of those advantages largely depend.

Of the factors influencing fundus visibility, three of them—the extent of illumination first, of the corneal surface area; secondly, of the transparent media through which observation must be made; and thirdly, of the selected retinal area—depend mainly on the concentration of and the solid angle subtended by the rays emerging from the ophthalmoscope. A wide illumination of the corneal surface and of the transparent media is at all times disadvantageous, though it is less so when the pupil is large than when the pupil is small. Fundus details are better studied, through either large or small pupil, when the illumination is concentrated over no more than a small area of the fundus, for reasons partly subjective and dependent on contrast, partly objective and dependent on "haze." The present common principle on which electric ophthalmoscopes are designed should make reasonable concentration of the light, by focussing of the image of the lamp filament, an easy matter to attain, and yet various if not most makers aim to produce diffuse illumination and to eliminate this image of the filament. The pattern of small

* MS. of this Article received July 10, 1923.

lamp now usually employed, having a single "end-on" looped filament* whose summit mainly provides the illuminating rays affords a reasonably restricted light-source. When this is suitably focussed in the instrument the image of the summit of the curve of the filament forms on the fundus a single straight linear streak of light, which in a sense partly simulates in effect the bundle of light derived from a slit-lamp. When the ophthalmoscope is so adjusted it provides a most valuable means of simple inspection of the macula in detail through the undilated pupil—a procedure which is impracticable when the instrument is adjusted to render a more diffuse illumination. Some instruments are so designed that the focussing of this image on the retina is impossible; I have seen even frosting of the lamp-bulb resorted to in order to prevent it. The appearance of the macula is enhanced by concentration of the light alternately to its side or directly on it. A small pathological elevation of the fundus shows in better contrast by such "proximal illumination." Restriction of the cross-section of the path of the rays also facilitates examination of the fundus viewed through imperfectly transparent media—whence it is easier to see a fundus through partial opacities of the cornea and lens, with a properly constructed electric ophthalmoscope, than with the ordinary direct ophthalmoscope. It is not a correct criticism to say that restriction of the area illuminated tends to hinder detection of the fundus peculiarities; fundus details are not picked up by the observer's peripheral vision, but by his deliberate concentration ("macular fixation"). If, however, it is argued that some wider illumination is really necessary, then over and above the rays forming the linear streak, there is, with the electric ophthalmoscope, as at present made, sufficient aberrant but dimmer light on the surrounding fundus area to provide for its faint illumination.

The macula is more easily seen through a small pupil when the linear filament-image on the fundus is vertical than when it is oblique or horizontal; from this it follows that an electric ophthalmoscope should be provided with means to rotate the lamp easily so that the linear image may be at will always vertically set. Why the vertical disposition of the streak should facilitate viewing of the macula seems at first peculiar; but, I think, it results from various factors which admit of its explanation. First, the macula is sought by making the light streak travel from the disc outwards across the fundus; the observer's gaze, following the streak, will the more readily find the macula when the streak is disposed at right-angles to its own path of movement than when the streak is disposed horizontally and in line

* Trial and selection of the lamps is necessary; the filament may be bent or set unsuitably; the glass may present a terminal thickening distorting the path of the rays.

with that path. Nevertheless, even when the macula is detected its scrutiny is, I think, still easier when the light streak is vertical. The explanation of this would seem to be multiple; first, the surface corneal reflex is automatically evaded by combined rotatory and lateral movements of the instrument, and these are effected the more easily when—as obtains with a vertical disposition of the light streak—the necessary movements for rotating the instrument take place about an axis corresponding to the long diameter of its handle; secondly, the upper lid, if it comes low, is likely to cut off no more than a limited portion of the rays proceeding to form the vertical streak; thirdly, the surface corneal reflex creates a vertically elongated image of the illuminated face of the mirror—which may be appreciated by noting the change in disposition of the image as seen through the ophthalmoscope held horizontally—and it is easier, therefore, to make observation past one side of this than past its upper or lower extremity.*

When, as in direct ophthalmoscopic examination, the observer's eye is close to the observed eye this corneal reflex lies so much beyond the near-limit of the observer's accommodation that he only sees the image out of focus as an enlarged product of the reflex. A result of this is seen when the observer brings the ophthalmoscope lenses into use—with the concave lenses, provided the observer is not too close to the eye, the apparent area of the reflex image increases in size; with the convex lenses it diminishes in size to reach its minimum when the plane of the image is brought into focus, this being one factor in rendering the fundus of a hypermetrope easier to see by the direct method than the fundus of the myope. Now, when the lens or vitreous is being examined, *e.g.*, by the use of the +12 in the ophthalmoscope, the corneal reflex is not so far from being also in focus, *i.e.*, reduced to a smaller size; and it will be found, in examining through the undilated pupil, that fine changes in the lens and vitreous, focussed with the +12, are seen as clearly when the linear streak is horizontal as when it is vertical.

The direct electric ophthalmoscope, used with its +12 lens, affords a particularly easy means to detect fine lens changes in the early stage of their manifestation; fine vacuolar changes in the lens thus focussed are revealed with great clearness. There is, however, a class of case which does not reveal itself as a lens opacity in the ordinary sense if it is viewed in close focus by the direct electric ophthalmoscope and +12, because this lens does not thus interrupt the intensity of the diffuse red fundus reflex. It is a class of case revealing a very diffuse change of the lens-substance mainly between Vogt's anterior senile nuclear surface

* This vertical elongation of the image does not occur with all makes of electric ophthalmoscope.

and anterior embryonic nuclear surface, of such a physical character as to distort rather than interrupt the path of the rays. (The condition is, therefore, not so rapidly revealed in direct illumination by the Gullstrand slit-lamp.) It may be remarked by an observant patient complaining of distortion of straight lines, or even of monocular diplopia, but not by his complaining of "glare" in bright light; it will be detected by the observer, not during his close focussed direct ophthalmoscopic examination of the lens, but either during his examination of the fundus, when he will note distortion of the view (much as in cases of early keratoconus), or during plane mirror distant retinoscopy examination, by which no demonstration of this condition is afforded equal to the view seen when using the direct electric ophthalmoscope at a distance of about two feet from the patient. When using the electric ophthalmoscope thus the emerging rays must be concentrated into a focussed streak the vertical or horizontal disposition of which is immaterial, the only virtue in the formation of the streak for this purpose being the resulting concentration of the rays in sufficient intensity to yield the maximum red reflex at the greater distance from the eye at which the instrument is being used; the electric ophthalmoscope, therefore, cannot be used for this purpose if it is constructed without facilities for proper focussing of the filament. This method of using the instrument is uncommon but it affords what is the easiest way for students to see and appreciate in an early stage of their manifestation such diffuse lens changes, whose detection by the more ordinary of the simple methods of examination they are apt to find quite difficult.

The question is sometimes raised as to whether the electric ophthalmoscope possesses any advantage over the ordinary ophthalmoscope fitted with the small plane mirror in the detection of fine floating "dust" and "hair" like or filamentary deposits in the vitreous. When the examination is made casually and through a dilated pupil the difference in the relative advantages of the two instruments is not great, but, such as there is, it is in favour, I think, of the electric ophthalmoscope. Through the undilated pupil these features are certainly more easily seen with the aid of the electric ophthalmoscope. Certain details are worth emphasis to facilitate detection of the very finest of these "opacities." The battery must be fresh; the light must be concentrated to a focussed streak as described above; the observer should place the +12 lens in position and then approach the eye until he sees the pupil in focus. He then approaches a little closer and so brings the vitreous into focus, directing his light and his gaze so that the white blurred unfocussed image of the optic disc forms an illuminated background to the opacities

which he is seeking. If the observer loses his appreciation of the plane of the vitreous, he need only come back to the focus of the pupil from which to start again. It is better to do this than to maintain a fixed distance and to focus by rotating into position lenses of varied strength. If desired the little finger may rest on the patient's chin to maintain the necessary distance. To observe movement imparted to these opacities it is helpful to give the patient a fixation object (*e.g.*, small light specially arranged) horizontally in front, and for the observer to take up his view with the optic disc as a background when the patient is fixing the distant object; then the patient may be instructed to look up and back again with the certainty that he will automatically bring his optic disc back to the desired position relative to the observer's gaze. The finest of these vitreous products lose the movement imparted to them almost immediately the eye ceases to move; if the white background is not automatically brought into the line of the observer's gaze, and he has to seek it, no movement is seen by the time he recovers the direction of the disc. These details may sound a little laboured, but there is some excuse for emphasizing them when it is considered how fine these products may be and how important is their early detection in various clinical types of cases.

Dr. Hardcastle* refers to the subject of back-glare at the inspection hole of the ophthalmoscope. The employment of a metal mirror, in which any thickness at the edge of the inspection hole is bevelled with the concavity of the bevel facing the observer, does much to reduce glare, as also for obvious reasons does the conversion of the hole to a slit with an open thick end. It is assumed that neighbouring parts accessible to the rays are kept blackened. Beyond these factors others on which the back-glare depends have reference to the intensity and concentration of the source of light, the relative distances separating source, condensing lens and mirror, and the angle of inclination of the mirror. Scatter of light at the edges of a slit in a thin plate bearing a reflecting surface is modified by the angle of incidence in the line of the slit of the light upon the surface. In an ophthalmoscope I have experimented with, the employment of more than one mirror enables the light to be incident on the final mirror at a more acute angle than is usual.

Dr. Hardcastle states his desire to employ a stronger source of light. I have used daily for the past two or three years one make of pocket electric ophthalmoscope which, though it does not lack room for improvement in its design, is at any rate constructed with due regard to some of the features referred to above, and

* I speak without the advantage of having tried the application of the prism suggested by Dr. Hardcastle.

comes as near to the desired standard as any which I know at present on the market. In this particular make of instrument the lamp is a 2.5-volt one worked by a two-cell dry battery. This lamp gives quite sufficient light for ordinary routine clinical work provided the battery is of full strength. I have the instrument in constant use; the battery, costing little, is renewed about once a month. Some makes of battery are apt to fall rather below their initial strength early in their use; I have found Messrs. Siemens' batteries keep up to their initial strength for a long time. The battery for a 2.5-volt lamp being small is easily accommodated in the handle of the ophthalmoscope; a flexible wire connected with an independent battery is inconvenient. The enlargement and increased length of the handle of the ophthalmoscope to accommodate the battery necessitates projection of the patient's head slightly forward to enable the large handle to clear his chest. The current is always used at full strength; the only use I have found for a rheostat to diminish the light is to enable the instrument, by removal of the ophthalmoscope proper, to be used for testing subjective projection to light, when a very convenient means is thereby provided for roughly mapping out a field of, *e.g.* a cataract patient, to light-stimulus of varied strength.

If the instrument is to be carried much in the pocket the switch should have some sort of catch to prevent accidental contact turning it on. The instrument being heavy is apt to fall easily from the pocket: a fixed ring for the attachment of a safety tape would be useful.

For those who use the direct electric ophthalmoscope to the exclusion of the ordinary one it may be asked for what purpose, if any, is it unsuitable. The fundus of a myope of moderate degree may be viewed with greater ease by the direct electric ophthalmoscope than by the ordinary one, but with myopes of high degree the direct method is unsuitable with either instrument. Given an electric ophthalmoscope, and for high myopes a concave mirror fitted with the usual +2 lens in its observation hole (and possibly combined with a plane mirror for retinoscopy), the observer is well equipped with the portable instruments necessary for deep observation in routine work.

Provided the electric ophthalmoscope conforms generally to the indications outlined above, I think that the comfort and ease afforded by its use (especially in the examination of children), the enhanced visibility of minute conditions of the media—particularly of the lens and vitreous—the improved view of the macula in particular through the undilated pupil or of the fundus generally through impaired media, all give to the electric ophthalmoscope advantages which in practice render it superior to the ordinary ophthalmoscope.

ANNOTATIONS

The Centenary of the Lancet

The *Lancet* was born on Sunday, October 5, 1823, and celebrated its hundredth birthday in the issue dated October 6, 1923. And what a celebration it is! There must be few periodicals which have retained their original title and their main objectives intact for 100 years. In spite of the editorial disclaimer that "it makes no pretence to being a history of medicine during 100 years," the fascinating Supplement which forms the bulk of the Centenary number of the *Lancet* constitutes a veritable history of all that has happened of importance in a century of publication. The large share taken by the *Lancet* in these happenings, through the virile personality of its first proprietor and editor, Thomas Wakley, and through the unswerving loyality to his aims, if not always to his methods, of his successors, has rendered it possible to construct a connected story of the history of medical progress from the columns of the journal.

How Thomas Wakley was stimulated by misfortune to endeavour to redress grievances and to right the wrong must be read in full to be appreciated. When a man of strong character feels it his duty to redress wrongs his methods are apt to be the reverse of gentle, and this was so in Wakley's case. It has been said by a lay contemporary that the title *Lancet* suggests the cutting away from the body politic of any offensive growth. After reading the story of the first ten years when "the *Lancet* was a duelling ground for a series of fierce encounters between the Editor and the privileged classes in medicine" we incline to the view that the blood letting uses of the instrument must have been the source of the title. In the first ten years the paper was engaged in ten actions at law. Six were for libel, the aggregate sum claimed being £8,000. Yet so true in substance and in fact were the *Lancet's* statements regarding nepotism and malpractice at the hospitals, though they were sometimes couched in the most provocative language possible, that the aggregate amount of damages awarded was only £155 0s. 0¼d.

It is clear that the present editorial staff has suffered from an embarrassment of riches in preparing the Supplement, for, while the latter extends to 154 columns of the current number, it has not been found possible to go into such detail in the later sections as in the earlier, when "personalities and things were under notice which could not be objects of memory to many living."

It is impossible in a short annotation to summarize this century-embracing Supplement. We can only recommend to every member of the medical profession that he possess a copy of this number of the *Lancet* and, after reading it, make a mental comparison of things as they are to-day with what might have been

had not Thomas Wakley (1823-1862), his sons, James (1862-1886) and Thomas H. Wakley (1886-1905), and his grandson, Thomas Wakley, Jun. (1886-1908), and the present editorial staff initiated and carried on a campaign, first of all against the leaders of the medical profession itself and, afterwards, against all that was inimical to the medical profession and to the public interests. But, as the lay contemporary already referred to remarks, "on its hundredth birthday the *Lancet* has the reputation of being a serious and solemn medical newspaper. There is no sign at all in its careful pages of that romantic, violent, but withal, splendid past which was so very well known to our grandfathers." Times have changed and we with them. The fierce battle has been fought for the right, and the energy formerly directed towards reformation has been largely redirected towards information. Following upon the exposure of nepotism and malpractice, laziness and greed amongst the leaders of the profession, came the organized movement against tuberculosis, the treatment of insanity, the exposure of food adulteration by means of the *Lancet* Sanitary Commission, the enquiry into Workhouse administration, anaesthetics, Listerism, the foundation of Epsom College, the Medical Act of 1886, the registration of midwives and so on up to the present time; in all of which movements and discoveries the *Lancet* has taken a hand and often played a trump card. What with the domestic history of the Journal, the history of its activities, the sketches of character of past medical masters and the reproduction of their features (there are some fifty of these portraits including a colour reproduction of a Landseer sketch of Thomas Wakley) one cannot find a dull moment in the perusal of this, surely the most important piece of medical journalism ever attempted.

Monograph Supplements

Papers which are too long for insertion in one or even two numbers of this journal are occasionally submitted to the Editorial Committee. The subdivision of such papers is always unsatisfactory and often leads to less than proper justice being accorded to them. In some cases it would be quite impossible for the journal to allot the necessary space. The Editorial Committee has in several instances been forced to refuse monographs which were well worthy of publication owing to this cause. It has, therefore, been arranged, with the sanction of the Directors, to issue from time to time Monograph Supplements. These will be published in the same form as the journal, and will be issued at a reduced price to subscribers to the journal. We have pleasure in announcing that the first Monograph Supplement, now ready. is the Gifford Edmunds Prize Essay on Interstitial Keratitis, by Mr. W. T. Holmes Spicer.

ABSTRACTS

I.—MORPHOLOGY

(1) **Rochon-Duvigneaud, A., and Mérigot de Treigny, P. (Paris.) Comparative Morphology of the emmetropic, hypermetropic and myopic eyes studied by the method of superimposed projections. (Morphologie comparée de l'oeil emmétrope, hypermétrope et myope, étudiée par la méthode des projections superposées.)** *Annal. d'Ocul.*, Vol. CLV., July, 1918.

(1) In the present paper **Rochon-Duvigneaud** and **Mérigot de Treigny** deal with two different subjects; in the first part the comparative anatomy of the human eye in the three refractive conditions is discussed while in the second part the morphology of certain birds' eyes is discussed. The feature common to both the investigations is the use of the drum or screen of drawing paper on which comparable sections are projected and then outlined with pencil or charcoal. The sections should be through the corneal centre and the fovea horizontally, and the screen should be at a constant distance from the projecting apparatus. The authors in this way compare three human eyes, a woman's eye found clinically to have 7.50 D. of myopia and, after section, a length of 26.5 mm., an assumed emmetropic eye of 24 mm. length and an assumed hypermetropic eye of 7.50 D. and a length of 21.5 mm.; the latter two eyes were from males. The measurements are from corneal to retinal epithelium. The method of fixation is not stated.

The transverse axes at equator were 24 mm. in E., 22 mm. in H., and 22.5 mm. in M., using these letters for brevity to mean the eye of that particular refraction examined.

The corneal curves vary very little but the E. cornea is larger than the H. (which was obviously small at first glance); it is even a little larger than that of M. The anterior chamber is deeper in E., and the lens is placed further back than in either M. or H., in which latter the lenses coincide almost exactly. One does not find the deepening of the anterior chamber, so frequent in myopia. Interest is greatest in the posterior segments, which vary most. The E. eye is spheroidal, both diameters being 24 mm. The H. eye is shortened behind by 2.5 mm. in the antero-posterior diameter while its transverse is 22 mm. i.e. 0.5 mm. longer than the antero-posterior, so that this H. eye may be likened to an exaggeratedly brachycephalic head. The M. eye is lengthened at the expense of the posterior segment, which becomes dilated pocket-wise with the apex at the fovea. This lengthening goes along with a reduction in the transverse diameter at the equator, where the dimension is actually less

than in the E. eye, being 22.5 mm. instead of 24 mm. Hence the M. eye at this level is hypermetropic and there must necessarily be some intermediate emmetropic region. These zones of refraction, however, being so far from the centre of the retina, there cannot result any appreciable advantage for the vision.

Similarly the hypermetropic eye is a little less so at the level of the equator than at the posterior pole.

The second part of the paper gives a comparison between the eyes of the lapwing and the swift. Rochon-Duvigneaud had found after examining many sections of birds' eyes that the lapwing's cornea could be applied exactly to that of the swift, i.e., had the same curvature, being a little less in its transparent superficies. The two birds have the same refraction as measured by skiascopy, i.e., E. or slight H. The swift's eye is notably larger than the lapwing's, its length being greater. The corneal refraction being the same, there must be some compensatory arrangement in the other refractive media to make up for the difference in length of axes and so bring the two eyes back to E., which is the law in birds. The lens takes this duty. The anterior lens surface is almost flat in the two birds and is situated at the same distance from the cornea; the outlines of the two anterior capsules coincide almost exactly. The shape of the lenses, however, is very different, that of the lapwing showing a very bulgy posterior face, giving it considerable refractive power, while in the swift it is almost flat and, therefore, almost parallel to the anterior surface, so that this lens can act only very feebly on rays already refracted by the cornea. To sum up, the flatter lens goes with the longer eyeball of the swift, while the bulgy lens goes with the shorter eyeball of the lapwing. Why has the small swift a more developed eye? Because its longer antero-posterior diameter allows larger retinal images and so a better visual acuity. This is much needed by the rapidly flying swift because of the need for seeing and catching small insects whilst itself going along at great speed. On the other hand, the lapwing has a slow, hesitating flight, looks for insects on the ground only and so does not need such sharp sight. All the rapid fliers who seize their prey whilst themselves in flight, e.g., the falcon and hawk tribe, have eyes like the swift's with the posterior segment developed and bulgy. The slow fliers and those rapid fliers who feed on the ground, e.g., pigeons, have posterior segments more or less flattened, hence a shorter eye which receives smaller retinal images.

The variation of form of the lenses, compensating for the altered axial length, is due chiefly to changes in thickness of the annular collar (*bourrelet*) of the lens, a special part of the lens, peculiar to turtles, lizards and birds, which surrounds, like a ring, the lens equator. When it is thin the lens keeps its lenticular form like

that of a man, but in thickening sagittally, as in the swallow, swift, and kestrel, it becomes flush with the posterior lens surface, which is equivalent to flattening out that surface and annulling more or less completely the static refraction of the lens. Such are the means employed by nature to preserve an emmetropic refraction in the eyes of birds whose posterior segment has dilated in order to increase the size of the retinal images and to realize that vision demanded by the species which feeds in flight.

In other words, the increased visual acuity demanded by the flying feeders is realized by a dilatation of the posterior segment of the eye, which is equivalent to an increase in size of the retinal images, but the withdrawal of the retina (the directing organ) demands a corresponding modification of the dioptric apparatus and this is realized by the flattening of the lens (the compensatory organ), while the corneal curvature seems subject to other influences at present indeterminate.

W. C. SOUTER.

(2) **Bland-Sutton, Sir John (London).—The third eyelid.** *Lancet*, October 18, 1919.

(2) The first few pages of the *Lancet* of the above date present an unusually animated appearance. There are realistically drawn pictures of birds' and reptiles' heads and pictures of eyes of these animals in various stages of eclipse. **Sir John Bland-Sutton's** article is of much interest, dealing as it does with the anatomy and physiology of the musculature of the third eyelid, but it must be read in the original to be appreciated. The article ends with the following words:—

"The study of the muscles concerned in the movements of the third eyelid may cause you to reflect deeply on the absorbing subject of the physiology of muscles. Such a study may lead some of you to make discoveries in physics and neurology that will one day make the world gape with astonishment."

ERNEST THOMSON.

(3) **Baurmann, Dr. M. (Freiburg i.B).—On metaplastic development of the cornea in trout embryos. (Ueber metaplastische Umwandlung der Kornea bei Forellenembryonen.)** *Klin. Monatsbl. f. Augenheilk.*, January-February, 1922.

(3) **Baurmann** has been working in Axenfeld's laboratory on the regeneration of the lens. In the course of his experiments (removal of the lens at various stages in young trout embryos) he found that the subsequent development of the cornea was affected in a number of the embryos operated on. He points out the importance of such observations in the explanation of congenital malformations. His conclusions are as follows:

"1. The normal condition of the cornea in trout embryos, just as in amphibian embryos, depends on the ocular vesicle behind it.

2. Closure of the pupil, collapse of the anterior chamber with obliteration by connective tissue, and marked shrinking of the globe, in combination, lead to a metaplastic formation of the cornea, which then resembles the skin of the animal.

3. The resulting structure of the cornea is characterized by three separate factors, namely:

(*a*) Increase in the number of the layers of epithelium in the cornea.

(*b*) Marked elevation of the normally flat corneal epithelium.

(*c*) Appearance of mucous cells.

4. The source of the transformation, according to similar researches by Fischel, is to be sought in an internal secretion of lens and retina; my experiments, however, tend to show that purely physical causes, such as pressure, stretching or such-like, are of some importance."

The paper is illustrated by microphotographs and is accompanied by a bibliography.

E.E.H.

II.—VISUAL DEFECTS

(1) **Wilson, James, A. (Glasgow).—Visual defects: refractive and functional.** *Glasgow Med. Jl.*, April, 1917.

(1) In this short article **Wilson** takes up the very uncertain question of the proportion of ametropia in the population. As he says, this information can only be obtained by examining all the children and all the adults in certain areas, or representative numbers. Since the first requirement, namely, examination of children, is in process under various Medical Inspection and Treatment schemes, Wilson takes up this side of the problem, making use of his own statistics and those of H. W. Thomson. From a study of these figures he comes to the conclusion that, making allowance for the increase of myopia and diminution of hypermetropia in adults as compared with children, the following is a rough estimate, namely, in children: myopia, 5 per cent.; hypermetropia, 27 per cent.; in adults: myopia, 10 per cent.; hypermetropia, 20 per cent.

Mixed astigmatism is reckoned in with the myopia on the ground that this refractive condition "usually passes into myopia during adolescence." The figures refer to children examined in parts of the Lanarkshire area.

From the subject of the incidence of ametropia Wilson passes on

to consider those interesting and often troublesome cases where there is a high degree of visual defect and no practical error of refraction or other apparent cause of the bad vision. The lowering of visual acuity through defective environment is well known to every hospital surgeon, but another condition to which Wilson refers is perhaps not quite so fully appreciated, that namely which Wilson calls, though apparently with some hesitation, "hysterical or psychic amblyopia." He refers to one particular case of a girl of 14 years, but the reviewer is sure that this condition, which he calls hysterical with considerable confidence, occurs in very much younger children, usually (? always) girls. Wilson does not mention "shamming," though this is another possibility, especially in boys. Wilson then speaks of retinal asthenopia and ocular manifestations of shell shock. The latter he does not consider a separate entity and concludes as follows: "This review of the varieties of ordinary visual defects establishes the existence of one that is independent of ocular defect, a functional amblyopia— that is, associated with imperfect environment or toxaemia in some form, and that, with predisposition, the loss of function may be complete. A similar disorder of the nervous system probably exists in ordinary and in shell shock cases . . ."

ERNEST THOMSON.

(2) **Landolt, Marc (Paris).—Two cases of false muscular projection by the non-paralysed eye. (Deux cas de fausse projection musculaire de l'oeil non-paralysé.)** *Arch. d'Ophtal.*, mars-avril, 1917.

(2) In 1902 **Landolt** drew attention to the fact that the peculiar condition mentioned in the title was present in a certain number of cases of ocular paralysis.

If an individual whose eyes have unequal visual power, and in whom one is incontestably the master eye, is attacked by motor paralysis of the better eye, it will be found that, at least in some instances, the good eye continues to be the master and fixing eye, and that the deviation observed is in reality the secondary squint. In such cases after a varying interval from the onset of the paralysis, a new muscle equilibrium appears to be established and the faulty projection resulting from the excess of innervation constantly required to maintain fixation by the paralysed eye, disappears completely. An interesting counterpart to this fact is that the normal muscular sense of the non-paralysed eye (maintained, however, in a position of secondary deviation), induces a false orientation such as would result from paralysis of the muscle *of the same name* as that which is actually paralysed on the other side.

Landolt has recently observed two cases exhibiting this phenomenon. In each patient there was paresis of the *left*

external rectus; the *left* being the master eye and possessing a much higher degree of visual acuity. Each patient came under observation with the *right* (non-paralysed) eye covered to avoid diplopia; on examination projection by this eye was faulty. By covering the *left* (paralysed) eye for two to four days it was possible to re-establish the normal muscular equilibrium of the unparalysed eye with correct projection, and to develop temporarily false projection in the paralysed eye. The author is of opinion that cases of this kind are not very uncommon and the reviewer's experience is in accord with this view.

J. B. LAWFORD.

(3) **Terrien, F.—A simple method of detecting feigned diplopia. (Moyen simple de reconnaître une fausse diplopie.)** *Arch. d'Ophtal.*, January-February, 1918.

(3) Diplopia being a purely subjective phenomenon is one of the most difficult of all simulated ocular affections to detect. Moreover simulation of this condition is uncommon and is usually an attempt to prolong the duration of genuine double vision.

During the war **Terrien** has met with patients, the subject of ocular paralysis, from injury or disease, who continue to complain of diplopia in order to prolong their convalescence or their stay in hospital, and quotes the case of an officer who had diplopia following a contusion of the orbital region; for this trouble he had had several extensions of sick leave and applied to Terrien for another. The test here described proved that the diplopia was simulated.

Terrien's method consists in placing the patient in a dark room and letting him fix the flame of a candle. One eye is then obscured successively by a blue glass (alluded to in the patient's hearing as a clear blue) and by an opaque glass (alluded to as a deep blue). If he maintains that he still sees double it is obvious that he is malingering. This method, the author states, has never failed in his hands.

It is, in principle, similar to the use of a convex lens before the good eye, in cases in which there is assumed defect of its fellow. But the reduction in the visual acuity (which this test introduces) is a source of fallacy and arouses the suspicion of the examinee. In the blue glass test, on the other hand, there is no such source of error, for even if a dark or coloured glass placed before one eye obscures or colours the image perceived by the other, an opaque disc will not cause any diminution of luminosity in the uncovered eye. And the examination being conducted in a dark room, the patient is unaware that one of his eyes is hidden.

J. B. LAWFORD.

III.—RETINAL DISEASE

(1) **Fleming, Norman B. B.—Case of retinal arterial disease, with miliary aneurisms and exudates.** *Proc. of the Roy. Soc. of Med.: Sec. of Ophthal.*, February, 1917.

(1) A recruit complained of a complete central scotoma in the right eye. Fleming found that the right fundus presented widespread changes resembling those of retinitis circinata, but not showing the characteristic distribution. In addition, there was a pigmented figure at the macula. The retinal vessels were in places embedded in the very extensive opaque white patches found in many parts of the fundus. There was some local sclerosis and aneurysmal dilatation of the retinal arteries and thickening of the veins, particularly the superior temporal vein. There were old and recent haemorrhages at the periphery of the fundus. S. S.

(2) **Gourfein-Welt, Madame (Geneva).—The relation of exudative retinitis to angiomatosis of the retina. (La rétinite exsudative dans ses rapports avec l'angiomatose de la rétine.)** *Rev. Gen. d'Oph.*, April, 1922.

(2) Madame Gourfein-Welt has added considerably to our knowledge of exudative retinitis as described by Coats in 1908. She has had a case in which, in the right eye, there was angiomatosis and, in the left eye, exudative retinitis. The left eye ultimately became glaucomatous and was excised, and examined histologically. This examination is very fully described, and, from it the author concludes that, whereas Coats considered angiomatosis to be secondary to the exudative condition, the reverse is really the case, the angiomatous condition being primary and determining secondarily all the other characteristics of exudative retinitis. The fact that one eye presented angioma and the other eye exudative retinitis with underlying evidence of the presence of angioma, is certainly very strongly presumptive of the truth of the author's contention.

Further, the author considers that the more we study cases of exudative retinitis the more we shall find that vascular affections other than angiomatosis are the primary cause of exudative retinitis, for instance, Leber's miliary aneurism of the retina in children (which ultimately may take on the form of exudative retinitis), and also certain cases of traumatic origin where haemorrhages are caused in the external layers of the retina (birth injuries, wounds of the head, whooping cough). If, then, it be admitted that vascular affections of various kinds, and even traumatisms, may determine the appearance of exudative retinitis we can no longer consider exudative retinitis as a morbid entity. "The terminology of Coats

has the merit of very usefully designating certain very characteristic retinal alterations consecutive to haemorrhages in the external layers of the retina and in the sub-retinal space, in the same way that the term retinitis proliferans serves to designate a very characteristic state of the retina consecutive to haemorrhages in the internal layers and the neighbouring parts of the vitreous. But exudative retinitis is not, any more than retinitis proliferans, a morbid entity; for both of these terms designate pathological states of the retina which are consecutive to very various previous alterations. A still closer study will allow of our restricting the number of cases published under the name of exudative retinitis by classifying them under the morbid entity to which in reality they belong."

There are two plates illustrating the histological conditions in the author's case. We might suggest to our Swiss colleague that five misspellings distributed among the names of George Coats and the journal in which his important article was published are a rather large allowance.

ERNEST THOMSON.

(3) **Arganaraz.—Atrophia gyrata choroideae et retinae.** *Arch. de Oftal. Hisp-Amer.*, December, 1917.

(3) The author records an example of this rare condition which conforms in all particulars to the account first given by Fuchs. It occurred in a woman the child of a consanguineous marriage, who complained of night blindness. The refraction, as is the rule in these cases, showed a high degree of compound myopic astigmatism; the fields were much contracted. A coloured picture gives a good idea of the ophthalmoscopic appearances; the disc surrounded by a large myopic crescent, the retinal vessels shrunken in size, the general poor colour of the fundus, the grey white areas of atrophic choroid, in which show up clearly the sclerosed remains of choroidal vessels, and the remarkable absence of pigmentation.

R. R. JAMES.

(4) **Black, Melville (Denver, Colorado).—A case of massive retinal exudate.** *Amer. Jl. of Ophthal.*, Series 3, Vol. I, No. 2, February, 1918.

(4) In Black's case the exudate involved the nasal half of each retina and the disc. In spite of extensive laboratory work no positive cause could be found, but it was assumed to be tubercle. The patient, an Irish metalliferous miner, aged 23 years, and "as strong as an ox," was treated by tuberculin, iodine, mercury, strychnine; the teeth were put in order and the nose and sinuses examined (negative). After six months he disappeared from observation, but one gathers that during that time no change of importance had been noticed in the condition.

ERNEST THOMSON.

(5) **Argañaraz.—A case of alteration of the chorio-retinal pigmentation previously undescribed. (Un caso de alteracion corior-retiniana pigmentada, aun no descrito.)** *Arch. de Oftal. Hisp.-Amer.*, Jan., 1918.

(5) The author's case presented the clinical characters of retinitis pigmentosa with the annexed fundus picture. It occurred in an Arab, aged 28 years, and the history, dating from the age of 10 years, was one of deterioration of vision with night blindness. The refraction in the right eye was myopic—19 D. sphere with —2.0 D. cylinder, in the left eye—22 D. sphere—4.0 D. cylinder, and with this correction the vision in each eye was 1/20 and 1/50 respectively. The fields were contracted roughly to the 30° circle. The coloured plate which accompanies the paper shows well the state of affairs present, the large vertically placed myopic staphyloma; with its irregularly pigmented temporal edge is surrounded by an area of fairly preserved choroid and retina corresponding to the functional part of the field. The periphery of the fundus shows a very high degree of choroido-retinal atrophy, with remains of sclerosed choroidal vessels, and a scattered patchy distribution of pigment of the bone corpuscle type. The atrophic portion is sharply demarcated from the healthy in a peculiar crenellated manner. **Argañaraz** discusses the possible pathology of such a condition. He is in favour of a primary choroidal change very slow in its course, with involvement secondarily of the neuro-epithelial layer of the retina, and thinks that his case should be catalogued as an atypical retinitis pigmentosa, in which category he is inclined to place the atrophia gyrata of the choroid and retina which was first described by Fuchs, and of which he publishes an example in the previous number of this journal.

R. R. JAMES.

(6) **Beauvieux and Pesme (Bordeaux).—Diabetic retinitis. A study in pathological anatomy and pathogenesis. (La rétinite diabétique. Étude anatomo-pathologique et pathogénique.)** *Arch. d'Ophtal.*, Feb., 1923.

(6) This paper was read at the meeting of the Société française d'Ophtalmologie in May, 1922. The extreme rarity of specimens of this form of retinal disease justifies the long description, with a wealth of details, given by the writers.

The eyeball was removed from a man aged 66, who first came under observation during an attack of "haemorrhagic iritis" in August, 1921. The attack was then of ten days' duration, and had led to almost complete occlusion of the pupil; vision was reduced to perception of light. The fellow eye (right), free from iritis, showed numerous retinal haemorrhages, scattered over the

papillo-macular region and along the blood-vessels; no white deposits were visible. Vision = 8/10.

The patient was typically acromegalic. He had suffered from glycosuria for many years, and at this date was voiding about five litres of urine, with a sugar content of 300 grammes in 24 hours. The urine was free from albumen, casts and acetone. Two months later the blind (left) eye became glaucomatous, and was removed in November. At this date the right eye was the seat of the characteristic lesions of diabetic retinitis. The urine was still highly saccharine; a full chemical analysis is given. Albumen and casts, hyaline and granular, were found.

The patient was transferred to a medical ward and soon after left hospital. He was not seen again.

The authors have made a prolonged and minute study of the pathological histology of the retina of the excised eye, illustrated by one coloured plate and several black and white drawings. They have also given close attention to the pathogenesis of the retinal lesions; their discussion thereon is an interesting part of this paper, but is too lengthy to deal with fairly in a brief notice. The conclusions arrived at by the writers are given at the end of the paper under five headings:—

"I. The pathological histology of diabetic retinitis is, except in a few details, identical with that of the retinitis of Bright's disease; it is characterized by the presence in the retinal parenchyma of interstitial lesions (haemorrhages, plasma exudations) and of parenchymatous lesions (incomplete gangliform degeneration of the optic fibres).

2. In our case the unusual features were the absence of oedema, the comparatively small number of fibrinous exudates and their situation near the retinal vessels, the unusual degree of degeneration of the retinal vascular system, and the consequent greater tendency to haemorrhage.

3. In our opinion, the haemorrhage is dependent on the glycosuria. The appearance of white patches in the retina of a diabetic is an indication of an added renal defect, of a nephritis which will render the morbid scene more complex, and will darken the prognosis. In a word diabetic retinitis is of mixed origin; the vascular lesions, the haemorrhages, are the result of the diabetes, while the retinal exudates are induced by concomitant nephritis, sometimes difficult to determine.

4. We are unable, as the result of our observation, to state what is the toxic material, retained in the blood, which is capable of inducing the changes in the retina, and to say whether this rôle should be assigned to excess of cholesterin or to retention of nitrogenous material (*la retention azotée*).

5. The plasmal effusion, coagulated into fibrous masses, is

probably absorbed by migratory elements from the blood-stream, or by fixed peri-adventitial cells, which acquire the mobility of phagocytes under the influence of mechanical irritation by the products effused into the retinal tissue. These exudates then become transformed into fatty bodies by the action of these cells and are absorbed ultimately by the retinal veins and capillaries. The granulo-fatty cells are concerned in the automatic cleaning of the retinal tissue, equally in renal and in diabetic retinitis, and in a general way in all forms of exudative retinitis."

J. B. LAWFORD.

(7) **Gray, Dr. H., and Root, Dr. H. F. (Boston).—Lipemia retinalis.** *Jl. of Amer. Med. Assoc.*, April 7, 1923.

(7) **Gray** and **Root** have added two more cases to the small number of cases already recorded of lipemia retinalis in diabetes. The first case was a woman of 50, who died four and a half months after the recognition of the lipemia retinalis from diabetic coma. The second case was that of a man of 36, in which the lipemia retinalis disappeared completely in four days, possibly as a result of treatment by insulin.

The authors comment on the paucity of the literature of this affection, and state that they have only been able to find 26 recorded cases. The paper contains some analysis of the blood and urinary condition described by previous observers. This is chiefly of interest from the physician's point of view and not from the point of view of the ophthalmologist.

The bibliography attached is likely to be of use to anyone interested in the subject, and we take the liberty of reproducing it as it stands. The authors draw particular attention to the excellence of the lists drawn up by Hardy and Wagener, and the illustrations that accompany the papers by White and Heine.

"1. Heyl, A. G.: Remarks on Lipaemia Retinalis Occurring in a Case of Diabetes Mellitus, Philadelphia M. Times **10**: 318 (March 27) 1880; Intra-Ocular Lipaemia, Tr. Am. Ophth. Soc. **3**: 54 July) 1880.

2. Starr, L.: Lipaemia and Fat Embolism in Diabetes Mellitus, M. Rec. **17**: 477 (May 22) 1880.

3. White, W. H.: Guy's Hosp. Gaz. **16**: 295 (July 19) 1902; A Case of Diabetic Intra-Ocular Lipaemia, in Which the Blood was Examined During Life, Lancet **2**: 1007 (Oct. 10) 1903.

4. Reis, W.: Zur Kenntniss eines bisher kaum beachteten Augenspiegelbildes bei Lipaemie in Folge schweren Diabetes, Arch. f. Ophth. **55**: 437 (March 24) 1903.

5. Fraser, T. R.: Lipaemia in Diabetes Mellitus, Brit. M. J. **1**: 1205 (May 23) 1903.

6. Turney, H. G., and Dudgeon, L. S.: A Case of Intra-Ocular Lipaemia Associated with Diabetes, J. Path. and Bacteriol. **11**: 50, 1906.

7. Krause, P.: Ueber Lipämie im Coma diabeticum, Verhandl. Cong. f. inn. Med. **23**: 521 (April 26) 1906; La lipémie dans la coma diabétique, Sem. méd. **26**: 225 (May 9) 1906; Zur Symptomatologie des Coma diabeticum, Deutsch. med. Wchnschr. **33**: 85 (Jan. 10) 1907.

8. Heine, L.: Ueber Lipaemia retinalis und Hypotonia bulbi im Coma Diabeticum, Klin. Monatsbl. f. Augenh. **44**: 451 (Dec) 1906; Augenspiegelbefunde bei diabetischer Lipaemie, Deutsch. med. Wchnschr. **33**: 85 (Jan. 10) 1907.

9. Marx, E.: Ein geval von lipaemia retinalis, Nederl. Tijdschr. v. Geneesk. **2**: 808 (Sept. 21) 1907.
10. Hertel, C.: Mikroskopische Präparate und Abbildungen von einem Fall von Lipaemia retinalis, Ztschr. f. Augenh. **21**: 551 (May) 1909.
11. Köllner, K.: Lipämie, Centralbl. f. prakt. Augenh. **34**: 212 (July) 1910; Mitteilung über Lipämie, Klin. Monatsbl. f. Augenh. **49**: 109 (July) 1911; Lipaemia retinalis, Ztschr. f. Augenh. **27**: 411, 1912.
12. Stoerk, E.: Ein Fall von hochgradiger Lipämie bei juvenilem Diabetes mellitus, Wien. med. Wchnschr. **61**: 1297 (May 13) 1911.
13. Darling, C. G.: Retinal Lipaemia in Severe Diabetes, Arch. Ophth. **41**: 355, 1912.
14. Ulbrich: Lipaemia Retinalis, Tr. Ophth. Gesellsch. in Wien, Nov. 11, 1912, Ztschr. f. Augenh. **29**: 83, 1913.
15. Moore, R. F.: Lipaemia Retinalis, Lancet, **1**: 366 (Feb. 20) 1910.
16. Moore, R. F.: Diabetes in Relation to Diseases of the Eye, Tr. Ophth. Soc. U. K. **40**: 15, 1920.
17. Williamson, R. T.: Ophthalmoscopic Appearances in Certain Rare Cases of Diabetes, Brit. M. J. **1**: 120 (Jan. 22) 1921.
18. Cohen, M.: Report of a Case of Lipaemia Retinalis with Hypotony in Diabetic Coma, Arch. Ophth. **50**: 247 (May) 1921.
19. Hardy, W. F.: Lipaemia Retinalis. Tr. Am. Ophth. Soc. **19**: 229 (June 15) 1921.
20. McGuire, H. H.: Observations in a Case of Lipaemia Retinalis, Tr. Am. Ophth. Soc. **20**: 235 (May 1) 1922; Am. J. Ophth. **5**: 862 (Nov.) 1922.
21. Benedict, W. L.: Discussion of McGuire's paper, Tr. Am. Ophth. Soc. **20**: 241 (May 1) 1922.
22. Wagener, H. P.: Lipaemia Retinalis: Reports of Three Cases, Am. J. Ophth. **5**: 521 (July) 1922.
23. Czerny, V.: Ueber die klinische Bedeutung der Fettembolie, Berl. klin. Wchnschr. **12**: 593, 605 (Nov. 1 and 8) 1875.
24. Heine, L. (Footnote 8): Die Krankheiten des Auges, Berlin, 1921, p. 170.
25. Dimmer, F.: Der Augenspiegel, Ed. 3, Leipzig and Vienna, 1921, p. 338 (photomicrograph of the fundus of Ulbrich's patient).
26. Moore, R. F.: Medical Ophthalmology, Philadelphia, 1922, p. 168."

E.E.H.

(8) **Coppez, H., and Danis, M. (Brussels).—Senile macular exudative retinitis. (Rétinite exsudative maculaire sénile.)** *Arch. d'Ophtal.*, March, 1923.

(8) During the last few years the authors have observed a certain number of cases of an affection of the retina, the type of which appears to them sufficiently determinate to justify its designation as a distinct morbid entity. They have given it the above title, which indicates its chief characteristics. In searching ophthalmological literature they found records of several similar cases, but the writers have usually considered them as examples of already known types of retinitis, notably that described by Coats.

Coppez and **Danis's** paper is long and important, and is illustrated by four coloured plates and numerous diagrams. It begins by a review of the bibliography, and an attempt to collect the cases which appear to be identical with theirs. It then passes to clinical notes of six cases, three of which were under observation for periods of 8, 10, and 6 years. The review and clinical notes

we must leave for perusal in the original, and report the authors' statements under their heading of "general considerations."

From personal observations and from examples in literature, the principal characteristics of senile macular exudative retinitis may be noted, as follows:—

Aetiology.—Undiscovered. The disease occurs in persons of ripe age, with arterio-sclerosis, though this may not be more noticeable than usual in the old. The general health, as a rule is satisfactory. Syphilis is not a cause. No local causal conditions are present.

Symptomatology.—The affection begins in one eye by a positive central scotoma. In the earliest stage this scotoma appears to be transient, and is noticed as a series of small more or less opaque areas. In a few weeks or months it becomes established and remains unchanged. It is circular or oval in shape. At this period ophthalmoscopic examination reveals no abnormality, so that an erroneous diagnosis of retro-bulbar neuritis may be made. Later, prolongations of the scotoma may appear; they develop rapidly and may become separated from the central blind area. About this time the earliest ophthalmoscopic signs become manifest, consisting of a series of yellowish punctate spots in the macular region, fairly regularly arranged and quite discrete. These spots are situated in the external layers of the retina; a little later the latter becomes oedematous anterior to the spots; this is accompanied by metamorphopsia and photopsia. Gradually the separate spots become confluent and the plaque of exudation over the macula develops. Haemorrhages are soon noticed around the area of exudation. They appear and undergo absorption rapidly. The papilla and the central retinal vessels retain a normal appearance throughout.

After several months, an opaque whitish patch appears in the oedematous plaque. This increases gradually and appears prominent; for this reason it is not surprising that eyes have occasionally been excised at this stage, a diagnosis of tumour having been made.

The white prominence, with a more or less mammillated surface, continues to be studded with haemorrhages of variable size; it slowly increases in area until in a year or two it reaches nearly to the papilla. The edges are not sharp, and they are often surrounded more or less completely by a pigmented zone. The pigment spots are sometimes in the area of exudation, sometimes in the adjoining retinal tissue. New centres of yellowish spots are frequently seen to the temporal side of the central mass, and undergo a similar evolution. As the disease progresses, blindness becomes more and more complete, but occasionally the process becomes stationary, with loss of central vision only.

Treatment.—No therapeutic measures, general or local, have had any result. The reasons which have led the authors to differentiate senile macular exudative retinitis from Coats's disease, are briefly the following:—

The latter consists of retinal lesions, almost always unilateral, affecting young subjects. Vascular changes frequently accompany the retinal exudation, and occur in the early stages of the malady. The retina almost always becomes detached. Appearances resembling pseudo-glioma are observed, and a yellowish reflex is visible through the pupil. On the mass thus visible haemorrhages and vascular ectasias are noticeable. Later iridocyclitis and glaucoma supervene, vision is destroyed and enucleation is often necessary.

In the senile form the progress of the disease is slower. There are no appreciable vascular lesions. Complications are less frequent. Detachment of the retina has not been observed, and consequently no appearance resembling pseudo-glioma. In one case, in an eye, blind before the patient came under observation, iritis and secondary glaucoma were noted.

Ophthalmoscopic appearances in Coats's disease and the senile form, suggest clearly that the two affections are not identical. In Coats's disease the lesions are more widespread, more diffuse; the retinal vessels are often dilated, tortuous, or aneurysmal. In the senile form the retinal lesions are circumscribed, the optic papilla is clear, the vessels are unaltered.

The authors hold, therefore, that senile macular exudative retinitis should have a separate place in ophthalmological nosography, beside the retinitis of Coats and, perhaps, beside senile circinate retinitis.

J. B. LAWFORD.

(9) **Ellis, Arthur W. M., and Marrack, J. R. (Medical Unit and the Hale Clinical Laboratory, the London Hospital). An investigation of renal function in patients with retinitis and high blood pressure.** *Lancet*, May 5, 1923.

Ellis and **Marrack** have made a very useful study of 19 cases of " chronic interstitial nephritis " with retinitis. The authors emphasize that they are not dealing with acute nephritis, subacute nephritis or chronic parenchymatous nephritis. Since, during the collection of these cases the discussion took place at the Royal Society of Medicine on the differentiation of arterio-sclerotic and renal retinitis, the authors have first of all separated their 19 cases into two groups, one in which gross disturbance of renal function was evident and the other in which no such gross disturbance was found. From their tests of renal function (here omitted), the authors have separted these cases of retinitis into

two sharply defined groups, first, relatively young individuals (average age 33) with high blood pressure (average systolic 220) and gross loss of kidney function, with rapid death usually in uraemia, and, secondly, older individuals (average age 49) with still higher blood pressure (average systolic 245), but less disturbed renal function, in whom life was relatively prolonged and death, when it occurred, was from cerebral haemorrhage or heart failure. The authors consider the two possibilities that: (1) the two groups represent different stages or different forms of the same pathological process, or (2) result from different pathological conditions. They argue against the first alternative on the ground that the average age in the first group is no less than 16 years less than in the second, while the average systolic pressure is 25 millimetres less than in the second. If group 1 represented a later stage of group 2, the reverse ought to be the case. Further, Professor H. M. Turnbull, Director of the Pathological Institute of the Hospital, has found that at most of the autopsies of subjects showing evidence of renal destruction and high blood pressure these two conditions are usually, in degree, in inverse proportion to one another. The authors, then, are of opinion that the two groups of cases represent the result of different pathological processes, and that the patients in the first group are cases of primary renal disease with secondary high blood pressure, while those in the second group are cases of high blood pressure with secondary renal damage. The conditions underlying the retinitis which occurred in all are, therefore, on the one hand, chronic interstitial nephritis, and, on the other hand, hyperpiesis. The authors suggest that a similar differentiation can be made in most cases of high blood pressure. "In chronic interstitial nephritis a patient in previous good health is taken, rather suddenly, seriously ill and is found even at the time of first examination to have gross deficiency of renal function. Progress is steadily downward, and death frequently occurs within few months, and usually in uraemia. In hyperpiesis a longer period of ill-health usually precedes admission to hospital, the patients are generally older, and, on investigation, show relatively little disturbance of renal function. Life is generally more prolonged, and death, when it occurs, is usually from heart failure or cerebral haemorrhage."

ERNEST THOMSON.

IV.—OPHTHALMOSCOPY IN RED-FREE LIGHT

(1) **Koby, F. Ed.—Ophthalmoscopy of the diseased eye by red-free light. (L'Ophtalmoscopie de l'oeil malade à la lumière anérythre.)** *Rev. Gen. d'Ophtal.*, Sept., 1920.

(1) **Koby's** article is a sequel to that in the same journal for January, 1920, in which he dealt with the normal eye. It is of much interest but not suitable for abstract, partly on account of the descriptive detail and partly because these descriptions are not accompanied by coloured plates. There are certainly two uncoloured figures, but, nevertheless, the descriptions are difficult to follow accurately. One of the pictures shows a most interesting appearance of the macula in cystic degeneration, the cyst loculi being of the shape of the cells of a honeycomb. The other figure shows pre-retinal reflexes.

ERNEST THOMSON.

(2) **Vogt, A. (Basle).—The nerve-fibre tracing of the human retina in red-free light. (Die Nervenfäserzeichnung der menschlichen Netzhaut im rotfreien Licht.)** *Klin. Monatsbl. f. Augenheilk.*, Vol. LXVI, May, 1921.

(2) This is a continuation of **Vogt's** previous communication in the same journal on the macula lutea as seen in red-free light. Only the upright image is suitable for this study.

1. The normal course of the nerve fibres of the retina as seen in this manner may be summarized as follows: it shews a fine parallel striation in which, owing to anastomosing of individual bundles, a basketwork-like pattern is constantly recognizable. In spots where the bundles lie less close together are seen longitudinal slits whose presence gives rise to the above-mentioned design.

The bundles possess the same dull white appearance everywhere. They are distinguished from reflex lines not only by the absence of sheen but also by the absence of parallax when the mirror is moved about.

In passing over retinal folds the parallel course of the bundles is maintained. Corresponding to the crests and valleys of the folds, the bundles become undulated. Though reflex lines hide the bundles, they are often visible in the intervals between the former so that under certain conditions the picture of a lattice arises.

The striation begins at the margin of the vascular funnel and passes into the retina over the papillary border, roughly taking the course of the vessels further on. It does not, however, follow the windings of the vessels, but gets gradually finer towards the periphery of the retina, the path of the striae varying from straight to one gently curved. While almost invariably the main stems of the vessels overlie the striation, the small branches are often covered by it.

In the region of the macula and to the temporal side of it the course of the fibres is marked by special peculiarities.

On the papilla itself the striation is denser nasally than temporally, so much so that in some cases the nasal border of the disc becomes invisible.

The fineness of the fibre-bundle varies in different individuals. The thickest bundles are always found upwards and downwards from the papilla from which they arch out temporally. The papillo-macular bundles shew the finest tracing which runs in a straight line from the optic disc towards the centre of the fovea. Immediately above and below, this narrow tract of fibres comes into relation with gently arched fibre-bundles, which are themselves in juxtaposition to other bundles also proceeding temporally towards the fovea and gradually arching more and more, like the shells of an onion. Over a short stretch in the temporal foveal region their bending is so strong as to give them an almost vertical direction.

The circumfoveal reflex-ring is particularly striking in the young. This is caused by the kinking of the fibres on entering the region of the fovea.

With suitable incidence of light one occasionally sees the fibres continuing as the finest lines over the wall of the fovea into its depth and gradually disappearing.

In the arched area, whose extent is from one to two disc diameters temporally, one sometimes gets the impression of seeing in the horizontal plane, at the level of the line dividing the macula, a delicate steep inter-crossing of the fibres from above and below, traceable only along a very short stretch.

In normal eyes the course of the fibres is best seen in the young with dark fundi, the darker the better. Their path becomes far more obvious in pathological eyes, particularly in cases of obstruction of the central vein or one of its main tributaries, provided the patients are not too old.

2. In diseases, such as neuro-retinitis and obstruction of the central vein, the normal tracing of the retinal nerve fibres becomes at first rough and prominent owing to the fibre bundles undergoing irregular thickening and merging into one another; further, they show breaks along their course as well as formation of steps as in stairs, in the latter case sometimes giving rise to a picture comparable to that of the heart muscle fibres of the higher animals.

The swelling is most evident in the main bundles passing temporally from above and below the disc.

These changes may last weeks or months. They may recede completely and the normal striation return; when it does, however, it is less definite.

If degeneration follows, the striation is replaced by more or less fine, dull, partial or complete marbling. This is noticeable both in

ascending and descending retinal atrophy. Complete disappearance of striation occurs in cases where total blindness has lasted a year or more.

There are two figures in the text, the first illustrating the basket-plait pattern traced by the retinal nerve fibres, the second showing a scotoma corresponding to an area where the striation had disappeared.

At the end of the text there is a coloured plate giving eight pictures of the fundus oculi. The first represents the normal fundus and the rest illustrate cases described in the text.

D. V. GIRI.

(3) **Vogt, A.** (Zürich).—**The reflection of the anterior surface of *the retina in red-free light*. *The formation of pre-retinal* (superficial retinal) folds. (Die Reflexion der Netzhaut-*vorderfläche im rotfreien Licht*. *Präretinale [superficielle* retinale] Fältchenbildung.)** *Klin. Monatsbl. f. Augenheilk.*, June, 1921.

(3) Of the retinal reflexes seen in red-free light, **Vogt** considers normal the linear reflex striae of the veins and arteries, the arched reflex that circles round the papilla, now nasally, now temporally, the circumfocal and macular reflexes and the pre-retinal vertical reflex striation between papilla and fovea occurring characteristically in young individuals. The pre-retinal reflex lines with double contours which arise through formation of folds are pathological. The folds of the macular region observed in inflammations of the anterior part of the globe are probably caused by collateral oedema. These are the most frequent. Through contraction of scar tissue "traction-folds" arise.

Vogt divides the folds of the anterior surface of the retina into two main types, (1) those shewing reflex lines with double contour and (2) those without reflex lines. They occur in cases of keratitis and iridocyclitis, after contusio bulbi, in optic neuritis, occasionally in papilloedema, retinitis exudativa, retinitis pigmentosa, in acute retrobulbar neuritis and often as the only ophthalmoscopic signs in diseases of the accessory sinuses. The reflex double lines overlap the nerve-fibre layer and the retinal vessels. The normal vertical lines, often seen in the young, between papilla and fovea are distinguished by their fineness and direction from the pathologically formed folds. Where the pre-retinal reflex double lines and the nerve fibres cross a lattice pattern arises. In most cases the traction-fold does not show the double contour clearly. While the long more or less parallel course of the traction-folds is determined by the direction of the pull, folds caused by the collateral oedema due to inflammation run in part radial to the macula, in part temporal

to the papilla either vertically or slightly concentric to it, thus involving the area of greatest density of the choriocapillaris.

The peculiar way in which the formation of reflex lines begins is best studied in young subjects after contusio bulbi. The lines appear a day or two after the contusion, sometimes much later. At first they are irregular and gradually develop their typical form. They persist for days, weeks or even months, often with slight variation of their course. Whether the folds give reflexes and double contours or are reflexless and dull depends on the age of the individual, the kind of light used and its angle of incidence on the folds. Reflexes are seen mostly in young individuals. The same folds could appear dull in long-waved light and shiny in short-waved light.

These investigations lead Vogt to the conclusion that both the reflexless folds and the reflecting ones have, in the majority of cases, if not in all, one and the same basis. They owe their origin to the optical plane forming the boundary between the retina and the vitreous, i.e., the anterior surface of the membrana limitans interna. The index difference between vitreous and limitans interna plays an essential rôle in the production of reflexes.

He refers at length to similar ophthalmoscopic observations by other authors and their views as to their causation.

In the body of the paper there are reproductions of two micro-photographs of sections of the retina and one ophthalmoscopic diagram. There is a plate at the end giving nine fundus pictures in colour.

This is Vogt's concluding contribution on the subject.

D. V. GIRI.

BOOK NOTICES

Sémiologie Oculaire. La Calotte Cornéo-sclérale. Anatomie, Physiologie, Pathologie. By Professor FELIX TERRIEN. Paris: Masson et Cie. 260 pp. 1923. 25 fr.

This book as indicated by the author, comprises a study from the anatomical, physiological, and pathological points of view, of the corneo-scleral segment of the eyeball, or as he terms it "la calotte cornéo-sclérale." Except in the last chapter on "Ruptures and Penetrating Wounds" of the eyeball, it deals only with those structures, cornea, sclera, and ocular conjunctiva, which are accessible to external examination, and in which pathological changes are, as a rule, easily discoverable. The book is divided into two main parts, preceded by a few pages on embryological and anatomical "generalities." The first part of 68 pages is entitled "Anatomical and Physiological Characters,

and Clinical Examination." It deals with (1) the macroscopic, and (2) the microscopic characters of the cornea, sclera, and ocular conjunctiva; (3) the physiology of the anterior segment of the globe; (4) the clinical examination of the cornea and sclera under diffuse and focal illumination, by the corneal microscope and slit-lamp and by transillumination. The second part, extending to 142 pages, is devoted to diseases of the structures under consideration, the cornea, the limbus, the anterior portion of the sclera and episclera, and the ocular conjunctiva. This is followed by a section on Ruptures and Wounds of the Eyeball, including the radiography and treatment of intraocular foreign-bodies, and a few paragraphs on compensation for damage to or loss of sight, according to the French law of 1898.

This book, planned on somewhat novel lines, is one of more than usual interest, and will repay its readers. It is well and clearly written, and contains much clinical and pathological information not to be found in ordinary text-books. The chapter on examination of the sclero-cornea by the most recent and accurate methods is especially commendable. The illustrations in the text are numerous, well chosen and most of them are very good.

The reviewer is inclined to question the author's judgment in adding the section on ruptures and wounds of the globe; that subject, including the treatment of penetrating foreign bodies, has been so often and so fully dealt with elsewhere. For the rest of the volume the reviewer has nothing but praise. Those familiar with the French tongue will enjoy and benefit by its perusal.

Manuel de Neurologie Oculaire. Second Edition. By F. DE LAPERSONNE and A. CANTONNET. 1 volume de 416 pages avec 113 figures et 4 planches. Paris: Masson et Cie. 20f. 1923.

The writing of such a book as this must be a matter of considerable difficulty. It is not easy to decide how much to include and how much can be safely omitted. There is on the one hand the danger of devoting so much space to neurological material as to make the volume unnecessarily burdensome and complicated for the student of ophthalmology, for whom it is obviously intended; on the other hand, the intelligent student will not be satisfied with a bald recital of facts unaccompanied by any attempt at their rational explanation. This again requires an adequate summary of the anatomy and applied physiology of the nervous system, of which there may easily be too little or too much.

The method of presenting the subject must be another difficulty; it may be dealt with primarily from the ophthalmological side, the various symptoms due to lesions of the nervous apparatus

of vision and of the mechanism for the control of the movements of the eyes, being dealt with separately and systematically; or on the other hand, the text may be based on a neurological classification, and consist mainly of an examination of the ocular symptoms and complications that occur in different nervous diseases.

The authors of this text-book must be congratulated on the success with which they have surmounted these and other difficulties. The anatomical and physiological introductions to the different sections are on the whole adequate, and yet do not occupy too much space at the expense of clinical material.

The main point of unfavourable criticism is the very little attention that the pathology and pathological anatomy of the various lesions receive; thus no mention is made of the nature or cause of tabetic optic atrophy, and "optic neuritis" is simply divided into inflammatory and oedematous types without any discussion of the pathogenesis of either type. Though pathology may not have entered the authors' scope, some space at least might have been devoted to it in a text-book extending to over 400 pages.

There are also curious lapses in the book; all forms of optic atrophy, for instance, are dealt with in less than two pages, and no attempt is made in it to give a rational or systematic description or classification of the nature, symptoms or course of its different clinical forms. The subject of scotometry and perimetry might have received more attention, and the symptoms of disease of the optic chiasma certainly deserve more than a single paragraph in a volume of this size.

The first part of the volume is devoted to the anatomy and physiology of the mobility of the eye, the methods of its examination and the symptomatology of external and internal ocular palsies. Then there follows a discussion of the various disturbances of vision due to local and other lesions of the visual system, which is on the whole very fully and carefully dealt with. The sensory, vasomotor and secretory disturbances of the eye occupy the next two chapters.

The second section of the book describes the symptomatic disturbances of the ocular system which occur in various diseases of the nervous, digestive, respiratory, and circulatory systems, and as a result of intoxications and infectious diseases, for the book, despite its title, is not merely a text-book of ophthalmological neurology. These chapters dealing with general medical ophthalmology are so sketchy and incomplete that it is regrettable that they have been included in a volume which is otherwise so complete and reliable.

There is a sufficiency of well-chosen illustrations, both of diagrams and of clinical subjects, and a fairly complete index.

CORRESPONDENCE

WERNICKE'S PUPILLARY REACTION

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—I had not read Mr. Fisher's description of the manner of determining the presence or absence of Wernicke's pupillary reaction until yesterday. When I sent you my note on this reaction, I was unaware that I was describing a new or recent mode of procedure. I had heard that the late Sir Henry Swanzy was wont to place a patient sideways at a window when observing Wernicke's reaction. But my interest lay chiefly in the vitiating influence of ametropia of the eye under examination in this connection.

Yours truly,

DUBLIN,
October 5, 1923.

J. D. CUMMINS.

"OPTICAL BENEFIT" AND PANEL PRACTITIONERS

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—May I point out that insured persons applying to approved societies for optical benefit are being provided with forms for signature by the panel practitioner.

One form I have seen is a certificate that the patient is recommended "to consult an optician." By signing it the harassed practitioner is surely encouraging unqualified practice. Can you kindly bring this growing evil to the notice of your readers?

I am, yours faithfully,

STOCKPORT,
October 20, 1923.

GARTH APTHOMAS, M.D.

CONGENITAL MIOSIS AND THE NORMAL MUSCULUS DILATATOR PUPILLAE

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Will you allow me the following supplementary lines to the recent article by O. Berner and myself on "Congenital Miosis or Pinhole Pupils owing to Developmental Faults of the Dilatator Muscle."

Before we began our work with the irides from patients with congenital miosis, Dr. Berner had microscopically examined the irides from 12 normal persons in different ages between 17 and 65 (depigmentation: Alfieri or hydrogen dioxide). In all cases the dilatator muscle was found well developed from the pupillary margin to the ciliary border.

A report of our article in the *Lancet* (September 22, 1923, p. 614) objected to our anatomical explanation of congenital miosis that " the dilator muscle of the iris is normally so slight in development that for many years its existence was doubted." My reply to this criticism is given in the *Lancet*, October 20, 1923, p. 906.

Yours truly,

CHRISTIANIA, NORWAY,
October 31, 1923.

S. HOLTH.

NOTES

Deaths

THE veteran T. PRIDGIN TEALE died on November 13, at the age of 92 years. We shall publish details of his life in a later number of this journal.

We regret to announce the death on October 2 of GEORGE LIVINGSTONE MITCHELL, of Redditch, at the age of 29 years. Dr. Mitchell was formerly eye specialist at the Royal Naval Hospital, Plymouth, and assistant surgeon to the Sunderland Eye Infirmary.

* * * * *

Appointment

THE Secretary of State for the Home Department has appointed Mr. JOHN ROWAN, of Glasgow, to be an additional Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Lanark.

* * * * *

Alvarenga Prize

IT is announced by the College of Physicians of Philadelphia, that the next award of the Alvarenga Prize, which amounts to about three hundred dollars, will be made in 1924. Essays may be on any subject in medicine, provided they have not been previously published, and they must be received at 19, South 22nd Street, Philadelphia on or before May 1, 1924. Each essay must be typewritten and unsigned, but marked with a motto, and accompanied by a sealed envelope, bearing the motto outside and the name and address of the author inside.

* * * * *

British Journal of Ophthalmology

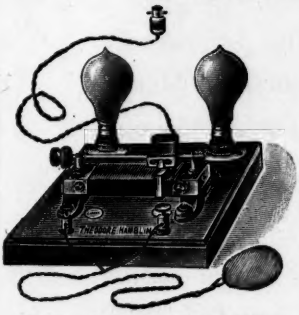
THE Secretary of the BRITISH JOURNAL OF OPHTHALMOLOGY has a few shares for sale. Applications should be sent to Mr. W. T. A. Rayner, Moorgate Station Chambers, E.C. Applicants must be British ophthalmic surgeons, and by resolution of the Company the number of shares that can be held by one member is limited.

THEODORE HAMBLIN LTD
LONDON, W.1.
OPTICIANS

MORTON LUMINOUS OPHTHALMOSCOPE

This instrument embodies many new features of decided advantage. It is constructed to withstand hard wear. It may be provided with a simple adaptor, as illustrated, which, inserted in place of the battery, enables the instrument to be used with an accumulator, or, through a resistance, direct from the house current.

Price complete in case with 3 transilluminators, £12-12-0
With adaptor, 15s. extra.



MADDOX EYE WARMER

For applying gentle continuous warmth to the eyes. Ordinary electric lighting current is used, but no current passes to the patient.

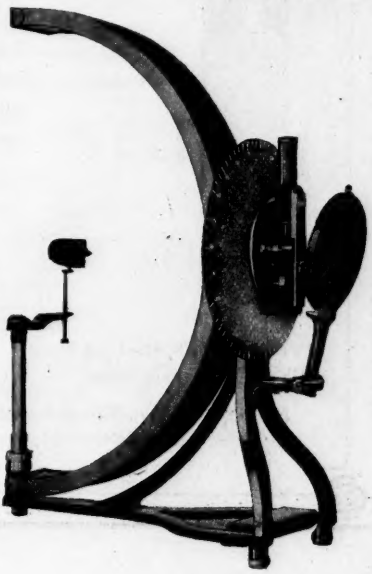
Can be used as a resistance for breaking down the current for use with the Luminous Ophthalmoscope and adaptor as illustrated above.

Price, £4 - 4 - 0

THE LISTER PERIMETER AND SCOTOMETER

This instrument effectively overcomes the disadvantages hitherto experienced with mechanical methods of Perimetry. Used as a Scotometer a large scale reading is recorded, the change being effected by merely turning a milled head. The movement is silent, and the recording automatic and accurate, both results being due to the fact that no gut chain or wire is employed, the object being carried on a solid cogged arc driven direct from a central pinion. The object carrier is invisible, and the objects which are supplied in various sizes and colours, are easily interchangeable.

Price complete with accessories £30
With self-illuminating attachment, £2 - 10 - 0 extra.



5, WIGMORE STREET,
CAVENDISH SQUARE,
LONDON, W.1.

TELEPHONE: LANGHAM 2000 (4 LINES). TELEGRAMS "PINCENEZ", LONDON

CURRY & PAXTON, LTD

Opticians

195-199, Great Portland Street,
LONDON, W.1.

Telegrams: "OPTICIAN, WESDO, LONDON."
Telephone: LANGHAM 2600.

Our Improved Luminous "Morton" Ophthalmoscope

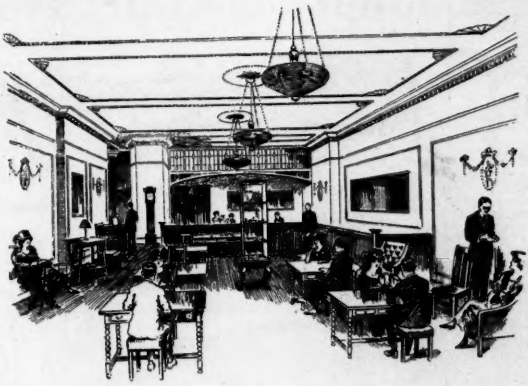
Is a stride towards perfection. This instrument combines the improvements of previous models and in addition is arranged for easy conversion into non-luminous direct *and indirect* method. The luminous mirror arm is quickly removed and replaced by the non-luminous arm.

Price complete - **£10 10 0**

BRANCHES:

LIVERPOOL: 8, Hardman Street. **SOUTHPORT:** 59A, Chapel Street
BRISTOL: 61, Park Street. **BATH:** 9, Bladud Buildings.

FACTORY: 147, Arlington Road, **CAMDEN TOWN, N.W. 1.**
Telephone: HAMPSTEAD 8179



Prescriptions are dispensed upon the premises by a highly qualified staff under my personal supervision. Special care is given to every detail, promptitude is also a prominent feature.

C. DAVIS KEELER

OPTICIAN

PRESCRIPTION SPECIALIST

47 WIGMORE STREET

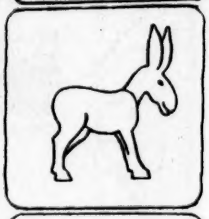
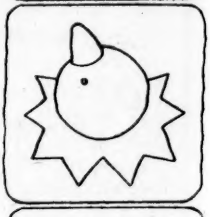
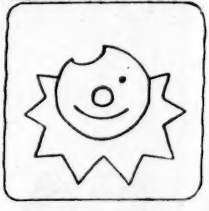
LONDON W.1.

TEL MAYFAIR 5262

New Series of children's *eye-training* pictures for use with the Worth Black Amblyoscope.

Set 1. Elementary.
Set 2. Advanced.
Set 3. Educational.

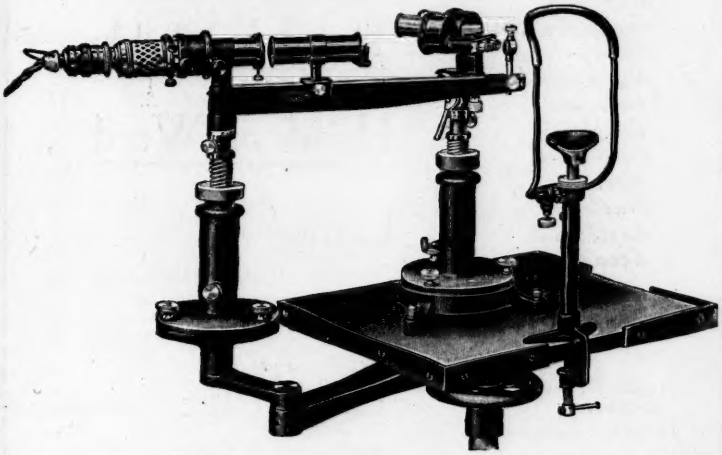
Instruments and pictures are loaned to patients, and the pictures changed periodically.

Clement Clarke,
Dispensing Optician,
16, WIGMORE STREET,
W.1
LANGHAM 2242

ZEISS

INSTRUMENTS FOR THE OPHTHALMIC SURGEON



CORNEAL MICROSCOPE WITH GULLSTRAND SLIT-LAMP

Write for Pamphlets describing:

Med. 111—THE GULLSTRAND SLIT-LAMP

and

Med. 4 — THE CORNEAL MICROSCOPE

A VARIETY OF OPHTHALMIC INSTRUMENTS ALWAYS ON VIEW AT OUR DEMONSTRATION ROOMS. A VISIT IS CORDIALLY INVITED.

Sole Distributors:

J. W. ATHA & Co.

CARL ZEISS JENA

8 SOUTHAMPTON ROW, LONDON, W.C.1

CARL ZEISS JENA

Rayner
(RAYNER & KEELER LTD).
Dispensing Opticians
London
Bradford
Liverpool
Leamington Spa
Harrogate
Huddersfield
Halifax
Leicester
Southport
Hove
Hull
Eastbourne
Leeds
WORKS.
Kemp Town
Brighton

TELEPHONE: MAYFAIR 447.
TELEGRAMS:
"OPTOLIMIT, WESDO, LONDON."

Sole Makers

of

The Moorfields

Hand or Ward

Lamp

and

The Triple

Operating Lamp

as used in

The Royal
London Ophthalmic Hospital

Further particulars on application:

9, VERE STREET, CAVENDISH SQUARE,
LONDON, W.1

Telephone: MAYFAIR 447.

THE BRITISH JOURNAL OF OPHTHALMOLOGY

VOL. 7. *DECEMBER, 1923.* No. 12.

CONTENTS

Communications PAGE

1. Notes and Specimens of a Case of Intra-orbital Neoplasm. By N. C. Ridley 545
2. A Case of Endothelioma of the Ciliary Body. By T. Harrison Butler and Eric W. Assinder 549
3. Professor Vogt's Course on Slit-lamp Microscopy. By T. Harrison Butler 551
4. The Modern Electric Ophthalmoscope: its Disadvantages and Advantages. By Major R. E. Wright 559
5. Small Electric Ophthalmoscopes. By Basil Graves ... 562

Annotations

1. The Centenary of the *Lancet* 568
2. Monograph Supplements 569

Abstracts

I. Morphology 570

II. Visual Defects 573

III. Retinal Disease 576

IV. Ophthalmoscopy in Red-free Light 585

Book Notices 588

Correspondence 591

Notes 592

THEODORE HAMBLIN LTD LONDON, W.1.

OPTICIANS

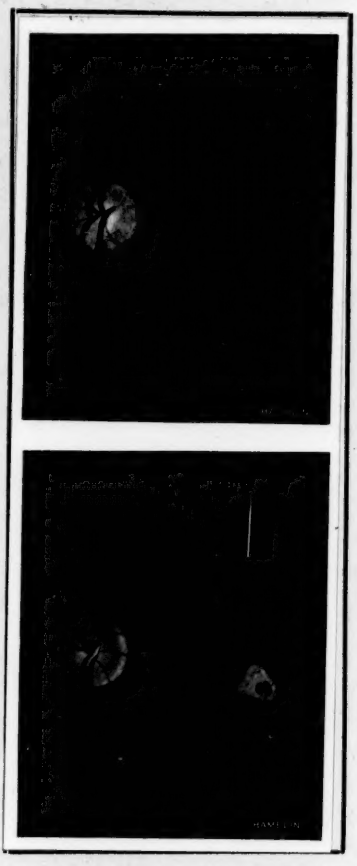
CITY BRANCH:
5, BIRCHIN LANE,
CORNHILL, E.C.3.

Branches:
MANCHESTER
LIVERPOOL
SHEFFIELD
LEEDS
EDINBURGH
BOURNEMOUTH
WINDSOR

FUNDUS PAINTING

These two reproductions are reduced copies of drawings from the fundus to illustrate the work now being undertaken by THEODORE HAMBLIN, LTD. In progressive cases, it is often of advantage to the Surgeon to possess a detailed portrayal of the condition of a fundus. To meet an increasing demand for quick and accurate paintings in colour or monochrome, a competent staff of draughtsmen, under the personal supervision of Mr. A. W. Head, is available at short notice, either at Surgeons' own consulting rooms, hospitals, or nursing homes. Surgeons may also send patients to 5, Wigmore Street, W.1, where comfortable dark-room accommodation is available.

Further particulars will be supplied on application.



Telephone:
LANGHAM
2000.

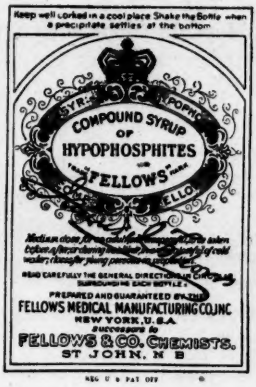
Telegrams:
London and Branches,
"PINCENEZ"

5, WIGMORE STREET, CAVENDISH SQUARE, LONDON, W.1.

The *Standard* preparation of

Syr: Hypophos: Comp: "FELLOWS"

will in future bear the following label:


Keep well Corked in a cool place Shake the Bottle when a precipitate settles at the bottom
COMPOUND SYRUP OF HYPOPHOSPHITES
FELLOWS
PREPARED AND GUARANTEED BY THE
FELLOWS MEDICAL MANUFACTURING CO.INC
NEW YORK, U. S.A.
FELLOWS & CO. CHEMISTS.
ST JOHN, N B

This label guarantees the Highest Excellence

To insure obtaining it, prescribers should order

Syr: Hypophos: Comp: "FELLOWS"

Samples and literature on request

Fellows Medical Manufacturing Co., Inc.
26 Christopher St., New York, N. Y., U. S. A.

THE McLEAN TONOMETER

is a direct reading instrument. It is not necessary to refer to a chart or other data to get a true reading of the pressure in millimetres of mercury.

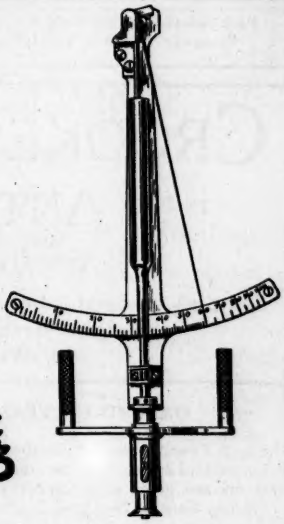
The weight factor is constant. All the intra-ocular pressures (10 to 130 mm. of Hg.) are obtained with one weight.

The scale is placed at the lower part of the instrument near the foot plate or point of application. This permits the instrument to be applied, maintained in proper position, and read by one man much more conveniently than any other instrument.

By invitation Dr. McLean read a paper on tonometry before the British Ophthalmological Society. Copies of reprint on request.

Sole Maker:

E. B. Meyrowitz
LIMITED
OPTICIAN,
1A, OLD BOND STREET, LONDON, W.1
NEW YORK. PARIS.



REDUCED PRICE
£7 10 0

ARTIFICIAL EYES.

G. TAYLOR,

8, New Oxford Street, London, W.C. 1.

(Telephone No.: Museum 3138)

ACTUAL MAKER OF THE

Snellen Reform Eye, and Special Convex Movable Globe with dilating pupils.

ALL EYES MADE ON THE PREMISES WITHIN AN HOUR. Each patient given a special sitting whilst the eye is made, thereby ensuring perfect fit and colour.

BOOKLET ON APPLICATION.

EXTRACT FROM LETTER. *22nd Feb., 1922.*

"*. . . reported some time ago that Dr. —— had done 2,000 operations with one pair of your De Wecker Scissors. You will be pleased to hear that the latest pair taken into use has already done 600 operations and still shews no signs of impairment.*"

DOWN BROS., Ltd., Surgical Instrument Manufacturers,

21 & 23 ST. THOMAS'S STREET, LONDON, S.E. (Opposite Guy's Hospital)

FACTORIES—KING'S HEAD YARD and TABARD STREET, LONDON, S.E.

Telegrams: "DOWN, LONDON." Telephones: HOP 4400 (4 LINES).

CROOKES' ULTIMATE

is the ANTI-GLARE de LUXE

Briefly "CROOKES' U."

Samples on application.

Melson Wingate, Ltd.,

30, Wigmore St., W.1.

OXFORD UNIVERSITY.—Diploma in Ophthalmology.

The next Examination for the above begins on July 21st, 1924. The necessary Courses of Instruction are held for two months, beginning on May 5th. Lectures and Demonstrations are given in Ocular Pathology, Bacteriology, Anatomy of Eye and Orbit, Optics, General Medicine in relation to Ophthalmology, Clinical Ophthalmology.

For full particulars apply to The Dean of the Medical School, Oxford University; or to P. H. ADAMS University Reader in Ophthalmology, 6, Holywell, Oxford.

The fee for this Course is **£15 15s.** and **£2 2s.** Attendance Fee at the Oxford Eye Hospital.

PANKHURST & BARRETT,
Manufacturing Dispensing Opticians.
Telephone: Mayfair 6117

54, NEW CAVENDISH STREET,
LONDON, W.1.

Morton's Ophthalmoscope

A neat strongly made instrument with 3 Mirrors (large double reversible), Colour Test on Handle and large Condensing Lens in Velvet-lined Case . £4 5 0

Similar to above but with only 2 Mirrors £3 17 6

Surgeon's Name Engraved on instrument, if desired, free of cost.

CLEMENT CLARKE

Prescription Optician

The technique of frame fitting to ophthalmic prescriptions, as carried out at the Wigmore Street establishment, is adhered to by experienced resident managers at the following branches:

TORQUAY	CANTERBURY	GUILDFORD
80 Fleet Street	55 Palace Street	Whitehall, High Street

ALL GLASSES ARE SUPPLIED FROM THE LONDON FACTORY

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL,
CHARING CROSS, W.C.2

The Practice of the Hospital is open to Qualified Medical Practitioners and Registered Students of Medicine, who may enter at any time.

The Out-Patient Department is open from 1 p.m. till about 5 p.m. daily, and Practical Instruction is given throughout the year in the Diagnosis and Treatment of Diseases of the Eye and Errors of Refraction. Operations are performed in the Theatre at 3 p.m.

Post-Graduate Classes, suitable for candidates for the D.O.M.S., R.C.P. & S. (Eng.) Part II, are held each Winter and Summer Session, in the following Subjects:—1. Bacteriology and Pathology; 2. Operative Surgery; 3. Refraction; 4. Fundus Discussion Class; 5. Methods of Examination 6. Medical Ophthalmology; 7. Clinical Lectures.

The Appointments of Clinical Assistant and Senior Clinical Assistant are open on certain conditions to both Men and Women Practitioners.

D.O.M.S. Examination, Part I.—If sufficient Entries are received, a four weeks' course in the Preliminary Subjects is held prior to each examination at **King's College** by arrangement with this Hospital.

Fees:—(For the Practice of the Hospital, including Practical Instruction in the Out-Patient Department)
One Month, £1 1 0. Six Months, £3 3 0. Perpetual, £5 5 0.
For Classes:—£1 1 0 for each class, except Operative Surgery and Pathology, for which a fee of £2 2 0 is charged.
Composition Fee £10 10 0 includes perpetual ticket and attendance at one course of classes, except those in Operative Surgery and Pathology.
Fee for Course, Part I, D.O.M.S., £10 10 0.
Separate classes, Anatomy and Embryology, £4 4 0. Physiology and Optics, each £3 3 0

For further particulars apply to the Dean.

ROYAL LONDON OPHTHALMIC HOSPITAL
(MOORFIELDS EYE HOSPITAL)
CITY ROAD, E.C.1

Gentlemen may enter on the practice of the Royal London Ophthalmic Hospital (Moorfields), at any time and are on certain conditions eligible for appointment as Chief Clinical Assistant, Clinical Assistant, and Junior Assistant.

Two courses of Instruction, extending over a period of 5 months each, beginning in October and March respectively:—

1. **PRACTICAL REFRACTION CLASSES**
2. **METHODS OF EXAMINATION (PRACTICAL) AND USE OF THE OPHTHALMOSCOPE.**
3. **LECTURES every evening except Friday and Saturday at 5.30—6.30.**
   On the following subjects:—**(a) Anatomy; (b) Physiology; (c) Optics; (d) Pathology (e) Ophthalmic Medicine and Surgery.**
   Consisting of:—**Medical Ophthalmology, External Diseases of the Eye, Motor Anomalies and Squint, Diseases of the Fundus.**
4. **CLINICAL LECTURES.**
5. **PRACTICAL PATHOLOGY.**
6. **PRACTICAL BACTERIOLOGY.**
7. **OPERATIVE SURGERY.**
8. **OPHTHALMOSCOPIC CONDITIONS—12 demonstrations in all (2 a month)**
9. **RADIOGRAPHY AND RADIOTHERAPY.**
10. **DISCUSSION CLASSES.**

FEES:—A composition fee of 24 Guineas will entitle the Student to a perpetual ticket for the practice of the Hospital, including attendance for one session on the above courses.

D.O.M.S. EXAMINATION.—In addition to the above courses which meet the requirements of Part II of the examination, special classes will be held twice a year, immediately preceding the date of the examination in the preliminary subjects, viz.:—Anatomy Physiology and Optics, required for Part I. The fee for this course is 12 guineas or 5 guineas for any one subject separately.

FEES FOR THE PRACTICE OF THE HOSPITAL:

Perpetual	£5	5	0	Two Months	£2	2	0
Three to Six Months	3	3	0	One Month	1	1	0

Clinical work begins at 9 a.m. Operations are performed daily between 10 and 1.

For further particulars apply to Mr. Robert J. Bland, Secretary of the Royal London Ophthalmic Hospital, City Road, E.C., or to the Dean of the Medical School, Mr. M. L. Hepburn.

Examination of Pathological Ophthalmic Specimens.
THE ROYAL LONDON OPHTHALMIC HOSPITAL
(MOORFIELDS EYE HOSPITAL), CITY ROAD, E.C.1.
PATHOLOGICAL LABORATORY.

Specimens removed from private patients may be sent to this Laboratory for examination.

A Report will be supplied, for which the fee of Two Guineas will be charged.

Specimens removed at any Charitable Institution will be examined, and if of special interest reported on free of charge.

In every instance a Clinical Report must accompany such a Specimen.

All communications to be addressed to the Curator of the Museum.

THE BRITISH JOURNAL OF OPHTHALMOLOGY LIMITED.

(Incorporated under the Companies Acts, 1908 and 1913.)

CAPITAL £5,000

Divided into 1,000 Ordinary Shares of £5 each.

Managing Directors

J. B. LAWFORD *(Chairman.)*
LESLIE PATON.

Directors:

PHILIP H. ADAMS.
ERNEST CLARKE
JAMES A. CRAIG.
SIR WILLIAM LISTER, K.C.M.G.
SIR JOHN HERBERT PARSONS
W. T. HOLMES SPICER.
W. G. SYM.
CYRIL H. WALKER.

Bankers:

LLOYDS BANK, LTD., with which is amalgamated THE CAPITAL AND COUNTIES BANK, LTD., 18, Wigmore Street, W. 1.

Solicitor:

LEONARD TUBBS, M.A., Moorgate Station Chambers.

Secretary and Registered Offices:

W. T. A. RAYNER, Moorgate Station Chambers.

The Company was formed in 1916 with the object of establishing a representative Journal of Ophthalmology for the British Empire. For this purpose the Company has incorporated the three existing Ophthalmic publications known as

The Royal London Ophthalmic Hospital Reports, The Ophthalmic Review, and The Ophthalmoscope.

CENTRAL LONDON OPHTHALMIC HOSPITAL,

JUDD STREET, ST. PANCRAS, W.C.1.

The post of Clinical Assistant is open to Men and Women Students.

Classes of Instruction are held three times in the year and commence in the months of January, May, and October.

All these classes are arranged in conformity with the requirements of the Conjoint Board for the Diploma in Ophthalmic Medicine and Surgery and with the University of London for the Degree of M.S. in Ophthalmology.

The Out-Patient Department is open at one o'clock daily, and practical instruction is given in the treatment of Eye Diseases, Errors of Refraction, &c. Operations performed daily, For Syllabus and Fees apply to the Dean.

NOW READY. *ORDER QUICKLY.*

PULMAN'S
MEDICAL
APPOINTMENT DIARY
1924

Price **12/-** net, Postage 9d.

PULMAN'S APPOINTMENT DIARY is the most practical Desk Diary for Appointments. Combines convenience with good quality materials and neat appearance; the size of the book is 8 in. × 6½ in. A full page is allotted to each day of the year, each page is divided into half-hourly sections from 9 a.m. to 8.30 p.m. The pages are numbered, and there is an alphabetical index in front. The book is strongly bound in half maroon leather with cloth sides.

It is important to ORDER EARLY.

Price **12/9**, *including Postage, solely of*

George Pulman & Sons, Ltd.
Manufacturing Stationers,

Art and Medical Printers

THAYER STREET, MARYLEBONE
LONDON, W.1.

Telephone: MAYFAIR 6486. Telegrams: "Printadom, Wesdo, London."

J. R. HOWARD,

Surgeons' Manufacturing Optician.

Branches at Jersey and Guernsey, C.I.

41, WIGMORE STREET, LONDON, W.1.

Telephone: MAYFAIR 1913

New Model Electric Ophthalmoscope.

POINTS OF CONSIDERATION.

The Mirror. Specially constructed to give 96 per cent. reflection. "U" slot with circular aperture, carefully set at most convenient angle - no edge reflections.

The Lamp. Metal filament of bright intensity—spring contact to lamp.

Lamp Slide. Smooth working from any position.

Rheostat. Easily controlled by stout ivory knob. Handle when in case fixes at "off" position, preventing any wastage of battery.

Battery. Special Hellesen cells of long life (standard size).

Handle. Heavily nickel plated, morocco leather covered.

Cap. Simple spring contact, avoiding undue pressure to base of cell.

Case. Compact silk velvet lined, covered with antique leather. Fitted with safety pockets containing spare lamp and mirror.

Complete with spares - **£8 8 0**

TRIAL INVITED.
INSTRUMENTS CONVERTED.

The Uni-Bifocal Company, Ltd.

40, Gloucester St., Rosebery Avenue, LONDON, E.C.1

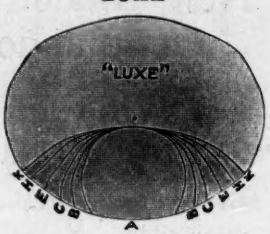
ONE PIECE BIFOCALS

Made from One Solid Piece of Hard Crown Glass.
Mathematically correct Centring.

Freedom from Chromatic Aberration.

"LUXE"

The "Luxe" Invisible Bifocal for **Convex** and **Weak Concave** Combinations.



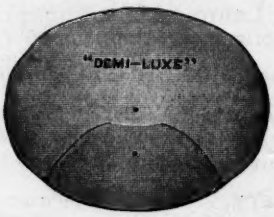
Six principal Reading Portions

Correct Centring (Convex) by selecting the **Correct Size** Reading Portion for **Each Eye.**

"DEMI-LUXE"

Semi-Invisible for **Concave only.**

The inherent defect in Concave "Invisible" Bifocals of bad centring has been overcome in this form.

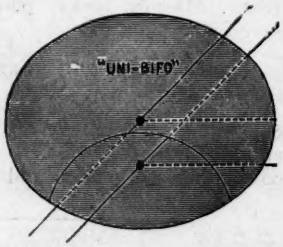


Correct Centring is obtained in all concave prescriptions. The central part of the ridge has been ground away to avoid irritation to the myope.

"UNI-BIFO"

Slightly **Visible Ridge** **Convex & Concave** Combinations.

The "Luxe" is generally preferred by reason of its "Invisibility," but there are a great many cases in which the "Uni-Bifo" is the only optically correct form, being adaptable to the most complicated prescriptions without sacrificing correct centring.



Sph, Cyl. Axis 45°, Showing 2 Optical Centres

ILLUSTRATED PAMPHLET, STANDARD PRICE LIST and SAMPLE LENSES post free on application.

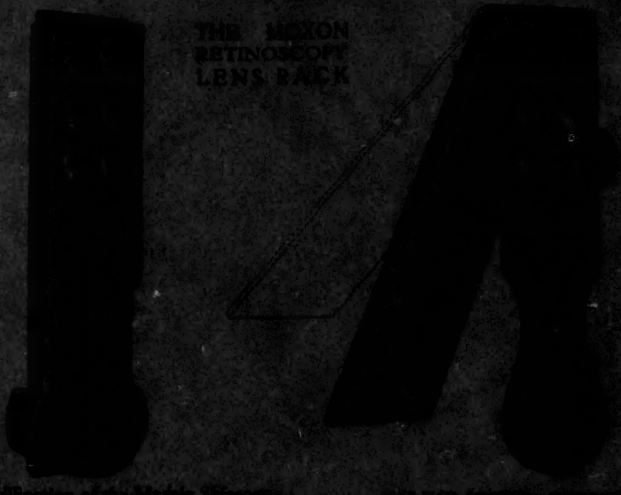
A Specialité of

THEODORE HAMBLIN LTD
LONDON W.1
OPTICIANS

PNEUMATIC SUNGLASS HOLDER

Interchangeable lenses giving magnifications of 3, 2 and 1. A feature of this instrument is a method by which the amount of convergence remains unaltered, no matter what magnification is being used
Price, in case complete ... £3 17 6

THE HOLTZ BINOCULAR OPHTHALMOSCOPE
In two sizes
£1 5 0 and £1 17 6



THE MELTON RETINOSCOPE LENS RACK

A modification of the Maple Silhouette, designed for greater convenience, compactness, and portability.
Price, in pigskin case ... £2 15 6

THEODORE HAMBLIN LTD
CAVENDISH STREET
LONDON W.1

Appointment

GEORGE SPILLER, Ltd.

Surgeons' Opticians

Awarded Gold Medal at the XVIIth International Congress of Medicine

UP-TO-DATE SPECTACLE AND EYEGLASS MAKERS AND PATENTEES in every precious material.

GOOD WORK AND CAREFUL FITTING.

CENTRES AND ANGLING SPECIALLY STUDIED IN FITTING FOR PRESCRIPTIONS.

Makers of the Successful

PTOSIS SPECTACLE

Personal fittings given for these at 32, WIGMORE STREET

THE SPILLER ELECTRIC OPHTHALMOSCOPE

Several Patterns, Metal Filament Lamps, Spaineless Steel and Glass Mirrors.

HOSPITAL, CLINIC AND SCHOOL WORK ALSO A FEATURE.

Only Address—

32, WIGMORE STREET, LONDON, W.1

The White Shop, opposite Debenham & Freebody's

Telephone: MAYFAIR 598 & 649